

SALINE VALLEY RURAL CLEAN WATER PROJECT

INTERIM REPORT ON MONITORING DURING 1989

by

THOMAS H. JOHENGREN¹

ALFRED M. BEETON²

RUTH E. HOLLAND¹

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¹Department of Atmospheric, Oceanic, & Space Sciences, University of Michigan

²Great Lakes Environmental Research Laboratory, National Oceanic And Atmospheric Administration, Department of Commerce.

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INTRODUCTION

This interim report includes monitoring results from the Saline Valley Rural Clean Water Project for the year 1989. Samples were collected 34 times throughout the year, beginning January 11 and ending December 28. Groundwater from wells near animal waste holding facilities was sampled on May 24, 1989 and October 24, 1989.

This report follows the format of last year's report (Holland et al., 1989). It includes results for pH, conductivity, suspended solids, ammonia nitrogen, nitrate nitrogen, soluble reactive phosphorus, available phosphorus, total phosphorus, silica, chloride, discharge, and temperature for each sampling date. Calculations of seasonal and annual loadings for each station are also included.

Land inventory data and water sample collection were provided by Dennis Rice and associated staff of the Washtenaw County Soil Conservation District.

The monitoring program, which was begun in July of 1981, was terminated at the end of 1989. This interim report will therefore be final. It is mainly intended to present tabular and graphical representation of the 1989 data. A brief description of patterns for each parameter is given along with a few summary statistics.

A final summary report of the monitoring data for the entire study period will be included as an appendix in the State's 1989 Annual Progress Report. That report will focus on water quality trends over time and where possible relate them to the land treatment programs installed within each

respective sub-basin. Summary statistics and graphs will be used to characterize concentration and loading data.

A description of monitoring strategy, analytical methods, and station descriptions can be found in previous interim reports (eg. Holland et al., 1989). Sampling stations remained the same and are shown in figure 1.

DATA COLLECTION SCHEDULE

It was originally hoped that samples would be collected weekly, but with the provision that the schedule would be adjusted to higher frequencies during storms and times of snowmelt. This strategy was followed during the first year of sampling but soon proved untenable due to the lack of personnel and funding. Between 1983 and 1989 sampling has occurred approximately weekly with an average of 32 samples collected per year.

IDENTIFICATION OF PARAMETERS MONITORED

The following chemical and physical parameters were measured on each sample: discharge, suspended solids (SS), ammonia-nitrogen (NH_3), nitrate-nitrogen (NO_3), soluble reactive phosphorus (SRP), available phosphorus (AVP), total phosphorus (TP), silica (Si), chloride (Cl), pH, conductivity, and temperature.

SUMMARY OF DATA

DISCHARGE

As usual temporal patterns for concentration and loading were dominated by variations in discharge. During 1989 there were seven significant periods of high discharge. The first peak was observed during the winter on January 11th as a result of temperatures in the high forties throughout the week and 0.43" of precipitation on January 7th. The peak was most intense at river stations (3A, 5, and 8) and station 7. A second but smaller winter peak was observed on February 2nd. This peak was caused by melting and runoff due to air temperatures reaching the mid-50's. Again increases in discharges were greater at river stations, presumably from the effect of accumulating drainage area.

The dominant event of the year for stations in Washtenaw County (3, 3A, 4, 5, & 9) occurred during the spring with peaks lasting over two sampling dates from March 29 through April 5th. Over 2.5" of precipitation occurred during the week and resulted in discharges from three to nine times greater than the annual average. The magnitude and duration of the elevated discharge likely resulted from the springtime conditions of saturated soils with little to no absorptive capacity.

Two significant storm events occurred during the summer season. The first was observed on the June 7th sampling as a result of 6.5" of precipitation falling between May 30th and June 3rd. Had sampling occurred closer to these dates the recorded values would likely have been much greater. For the Monroe County stations (6, 7, & 8) an additional peak occurred on June 21st, presumably from a localized storm. The second peak discharge of the summer was observed on July 26th as a result of 3.5" of precipitation falling

between the 19th and 25th. Runoff from this precipitation resulted in discharges 2X to 4X the annual mean.

The last two significant peaks occurred during the fall season. The first peak was observed on September 19th as a result of 2.7" of rain recorded from the 13th through the 16th. This peak was quite small at all stations except 7 and 8. Again it should be assumed that most of the increase in discharge would have occurred several days before sampling. The second highest discharge levels for the year were observed on November 16th. This peak resulted from a 2" storm which occurred on the 15th. Since peak discharges are typically observed within 12 to 24 hours of heavy rainfall it can be assumed that this sampling period recorded near maximum values for this runoff event. Discharge values again ranged from 2x to 4x the annual mean. It is interesting to note that the peak at station 8 was much smaller, suggesting the pulse had not yet reached the downstream terminus.

Annual mean discharges were higher than the previous year at all stations except 3 and 3a. Precipitation levels throughout the year were fairly constant (figure 2) with a recorded annual total of 40.0 inches. Stations 3, 6, 7, & 8 each had a greater maximum value than in 1988, while station 3a, 4, 5, & 9 had lower maximums. The discrepancy likely resulted from localized rainfall patterns.

SUSPENDED SOLIDS

As expected, concentration patterns for suspended solids closely follow those of discharge at all stations. Maximum values occurred in the spring during the highest discharge periods. In particular, values at station 9 were inordinately high and may reflect an increased potential for erosion due to exposed soils. Stations 6 and 7 generally had low SS levels and smaller

peaks. This pattern may be reflective of the flat topography of their drainage basins. It is unclear why concentrations were elevated at station 7 during the winter. One potential source would be exposed soils from fall preparation of fields.

All stations showed disproportionately high SS values during the July 26th sampling compared to the high discharge period in November. This is somewhat unexpected since most crops should be in full canopy. These conditions may have resulted from having rain on 3 successive days and sampling near the maximum levels of discharge. High velocities accompany these discharge peaks and result in increased load carrying capacity as well as the potential for resuspension from the streambed itself.

Despite increased annual mean discharges the mean and maximum values for SS were lower than in 1988 at all stations except 3A .

SOLUBLE PHOSPHORUS

Annual concentration patterns for SRP were slightly more variable and deviated somewhat from those of peak discharge. Highest peaks for stations 4 & 8 occurred during February and March runoff periods, while for stations 3, 3a, 5, & 9 highest concentrations were recorded for the November storm. Again stations 6 & 7 followed a different pattern with maximum values occurring in September.

Annual means for SRP were lower at all river stations and significantly lower at station 9 due to the absence of extreme values ($>1000 \text{ ug/l}$) seen during 1988. Conversely, there were significant increases in the mean and maximum values observed at station 4.

Unexpectedly SRP values at station 8 remained somewhat elevated throughout the summer. Applications of fertilizer and manure to fields may

overwhelm any losses resulting from increased biological utilization within the stream and within the wastewater treatment plant.

AVAILABLE PHOSPHORUS

Concentration patterns for AVP were similar to those of SRP but were much less sensitive to increases in discharge. Peaks were less severe and occurred at all stations throughout the summer. This pattern likely resulted from increased biological production. The analytical method may be extracting phosphorus directly from algal cells or simply picking up more phases of P which are trapped on particles suspended within the water column.

TOTAL PHOSPHORUS

As expected TP concentrations follow the pattern of discharge more closely than the other forms of phosphorus. Typically in our samples more than 50 percent of all P is bound to particles so patterns also closely mimic those of suspended solids. Stations 6 & 7 again showed exception to this overall pattern and TP values here may simply reflect increased biological production. At other stations the greatest peaks occurred during the November storm, particularly at station 9. Annual means were down from 1988 for stations 5, 7, 8, & 9 but higher for stations 3, 3a, 4, & 6.

AMMONIA

Most stations showed extreme peaks in NH₃ concentrations during February and March runoff periods. These elevated levels could have resulted from winter-spread manure and/or been enhanced by the colder temperatures which minimize volatilization and bacterial degradation. The cause for the severity of the June 21st peak at station 7 is unknown. Annual means and maximums were

up from last year at all stations except 9 which did not register the extreme values seen during 1988.

NITRATE

Elevated NO_3 concentrations did occur with increased discharge. A seasonal pattern with lower summertime values was also evident. As in past years, station 7 continued to show the highest levels of NO_3 throughout the year. There appeared to be a localized input of NO_3 at stations 3 and 3a during July. This signal did not reach downstream at station 5. It is unclear whether the pulse had not yet reached this point at the time of sampling or whether the input was simply diluted out.

SILICA

Concentrations patterns for Si were very similar at all stations throughout the year except for 6 & 7. Concentrations were not very sensitive to increased discharge but rather were more dominated by seasonal patterns. The dominant pattern at all stations was for spring-time minimums then increases throughout the summer and maximum in the fall. This response is presumably due to blooms of diatoms which typically occur between April and May. Concentrations then tended to gradually increase over the summer and fall. Patterns at 6 & 7 were again unique, showing more spikes during the summer. These unexpected spikes at station 6 were also seen for chloride and may be the result of airborne inputs from a nearby asphalt industry.

CHLORIDE

Concentration patterns for Cl were generally quite uniform at all stations showing no obvious discharge relationship or seasonality. Only stations 6 & 8 tended to show sharp peaks and as mentioned above may result

from airborne inputs. This is suggested by the lack of correlation to discharge and by the high degree of variance between years.

CONDUCTIVITY

As in previous years conductivity was quite variable throughout the year, ranging from around 700 to 1000 umhos. It again tended to be inversely proportional to discharge.

pH

Patterns for pH were very similar at all stations. There did not appear to be any strong relationship to discharge or major seasonal cycles. Values generally ranged from 7.0 to 8.0. As in the past, pH at stations 3 and 3a tended to be slightly lower than other stations.

TEMPERATURE

As always, we see the strong seasonal cycle reflective of the air temperature patterns common to this latitude. Again station 3 showed a much diminished seasonal cycle suggesting a constant groundwater source. The unusually warm air temperatures in February resulted in small peaks at most stations.

SEASONAL LOADINGS

For all stations in Washtenaw County the overall loading pattern was that SS was greatest in the spring, TP greatest in the summer, and SRP and NH₃ greatest in the fall. The fact that peaks for NH₃, SRP, and TP did not occur during the season of maximum discharge strongly suggests that differences in source amounts of these nutrients plays a critical role in determining their

loading patterns. Applications of fertilizers and manure are surely affecting the loading patterns for SRP and NH₃. The summer peak for TP was likely a combination of high SS levels plus an additional input from biological production within the water column. Loadings for SS continue to be disproportionately high during the spring reflecting the increased potential for erosion from exposed soil and/or increased streambank erosion due to greater flow rates and volume.

Loading at station 6 was greatest during the summer for all parameters, obviously due to discharge being three times greater than for the other seasons. Loadings at stations 7 peaked during both the winter and summer despite fairly consistent discharge. As seen in the past, NO₃ levels were particularly high at this station during the winter.

Loading patterns at station 8 were somewhat different. Here peak loadings for NH₃, NO₃, & SRP occurred during the winter. This pattern may result from variations in the discharge of the Saline and Milan sewage treatment plants. It is possible that removal efficiencies for these nutrients are less in the winter due to the colder temperatures. Like the other Monroe County stations, discharge was greatest in the summer rather than the spring, consequently both SS and TP showed peak loadings during the summer.

ANNUAL LOADINGS

The total amount of discharge compared to that in 1988 was about 20 percent greater at stations 3, 6, 7, & 8, about equal at stations 3a, 5, & 9, and only about half at station 4. The hydrographs at stations 4 and 9 have been recently checked by the Michigan DNR and large discrepancies exist between the new and original calculations. Loadings at these stations

(especially 4) should therefore be taken with caution. Despite the relative increase in total discharge at most stations annual loads of SS were lower at all stations except 8. It is interesting to note that stations 5 and 8 had similar SS loads despite a greater than two-fold difference in discharge. Loads for NH₃ were down at stations 3a and 9 but much higher at station 8. Loads for NO₃, SRP, & AVP were lower at all stations. Total phosphorus loads were much lower at stations 5 & 9, but higher at stations 6, 7, & 8. Annual loads for Si and Cl were fairly consistent to last years pattern and amounts.

GROUNDWATER SAMPLES

Wells near animal waste holdings facilities were sampled on May 24th and October 24th. Concentration results are reported in APPENDIX F. Overall, water quality trends were very similar to 1988.

Ammonia levels were again extremely high in well E (55,000 and 60,000 ug/l) suggesting that waste is continuing to seep through the bottom of the waste storage pit. Values were also high in well L (1586 ug/l) and well A (680 ug/l).

Nitrate levels were again very high in well B (18.5 and 16.9 mg/l) and exceeded public drinking water standards. All other wells had values less than 4.3 mg/l.

SRP levels were still high in wells B, C, I, & L at around 100, 200, 300, and 335 ug/l respectively. However, levels have decreased for the fourth consecutive year at wells B and C. Values in October were slightly higher than those for May.

Si values followed last years pattern being highest at well D and lowest at wells A, F, & I. Levels were moderate overall ranging from 9.4 to 22.7 mg/l.

Cl levels also were consistent with earlier trends being highest at well A (313 mg/l) and well D (235 mg/l). Levels were again lowest at well F reaching only 2.8 mg/l.

Minimum, Maximum, and Mean Values by Station

APPENDIX A

Table 1. Minimum, maximum and mean concentrations by station for 1989 data.

STATION	PARAMETER	UNITS	MINIMUM	MAXIMUM	MEAN
3	SUSP SOLIDS	mg/l	3.0	269	30.5
	AMMONIA	ug/l	47.0	575	177.4
	NITRATE	mg/l	0.7	10	2.9
	SOLUBLE P	ug/l	3.0	133	13.7
	AVAILABLE P	ug/l	6.0	66	17.9
	TOTAL P	ug/l	14.0	258	63.0
	SILICA	mg/l	6.1	14	10.7
	CHLORIDE	mg/l	20.0	46	32.1
3A	DISCHARGE	m ³ /sec	.01	.82	.108
	SUSP SOLIDS	mg/l	5.0	123	28.0
	AMMONIA	ug/l	32.0	254	102.0
	NITRATE	mg/l	1.3	21	3.7
	SOLUBLE P	ug/l	3.0	84	11.4
	AVAILABLE P	ug/l	5.0	54	16.7
	TOTAL P	ug/l	20.0	233	66.9
	SILICA	mg/l	2.8	12	8.4
4	CHLORIDE	mg/l	15.5	28	24.0
	DISCHARGE	m ³ /sec	.32	9.0	1.62
	SUSP SOLIDS	mg/l	2.0	145	27.6
	AMMONIA	ug/l	7.0	1756	147.7
	NITRATE	mg/l	0.4	7.9	2.7
	SOLUBLE P	ug/l	3.0	265	22.9
	AVAILABLE P	ug/l	5.0	61	16.8
	TOTAL P	ug/l	13.0	305	77.4
5	SILICA	mg/l	2.0	13	8.7
	CHLORIDE	mg/l	16.7	52	31.9
	DISCHARGE	m ³ /sec	.001	.85	.085
	SUSP SOLIDS	mg/l	3.0	290	43.1
	AMMONIA	ug/l	21.0	627	120.2
	NITRATE	mg/l	0.9	7	3.2
	SOLUBLE P	ug/l	4.0	133	15.4
	AVAILABLE P	ug/l	6.0	81	18.4

STATION	PARAMETER	UNITS	MINIMUM	MAXIMUM	MEAN
6	SUSP SOLIDS	mg/l	1.0	16	3.8
	AMMONIA	ug/l	15.0	169	42.1
	NITRATE	mg/l	0.2	13	5.5
	SOLUBLE P	ug/l	3.0	120	22.9
	AVAILABLE P	ug/l	1.0	23	6.8
	TOTAL P	ug/l	10.0	223	68.7
	SILICA	mg/l	0.1	28	6.7
	CHLORIDE	mg/l	20.5	175	59.5
7	DISCHARGE	m ³ /sec	.01	1.0	.123
	SUSP SOLIDS	mg/l	0.8	39	4.9
	AMMONIA	ug/l	18.0	678	76.5
	NITRATE	mg/l	2.9	15	8.0
	SOLUBLE P	ug/l	3.0	55	15.8
	AVAILABLE P	ug/l	1.0	16	5.7
	TOTAL P	ug/l	12.0	415	61.3
	SILICA	mg/l	0.2	17	7.4
8	CHLORIDE	mg/l	11.5	40	26.1
	DISCHARGE	m ³ /sec	.09	.62	.148
	SUSP SOLIDS	mg/l	2.9	113	38.1
	AMMONIA	ug/l	27.0	1680	141.2
	NITRATE	mg/l	1.5	7	3.5
	SOLUBLE P	ug/l	9.0	113	32.0
	AVAILABLE P	ug/l	2.0	42	23.7
	TOTAL P	ug/l	43.0	197	120.6
9	SILICA	mg/l	2.6	13	8.2
	CHLORIDE	mg/l	23.1	77	53.1
	DISCHARGE	m ³ /sec	.96	14.0	2.98
	SUSP SOLIDS	mg/l	2.2	247	33.9
	AMMONIA	ug/l	24.0	2570	214.8
	NITRATE	mg/l	0.9	12	6.1
	SOLUBLE P	ug/l	5.0	216	42.8
	AVAILABLE P	ug/l	4.0	69	16.9
	TOTAL P	ug/l	29.0	455	109.4
	SILICA	mg/l	0.1	11	7.4
	CHLORIDE	mg/l	23.6	46	40.2
	DISCHARGE	m ³ /sec	.04	.80	.177

MICROCHEMICAL Data for Stations Per Sampling Date

APPENDIX B

SALINE VALLEY January 11, 1989

DATE = 011189	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
pH	7.1	7.1	7.3	7.4	7.4	7.4	7.4	7.5
CONDUCTIVITY (UMOHMS)	700	650	550	650	900	500	490	700
SUS. SOLIDS (MG/L)	32	31	48	39	4.4	39	51	19
AMMONIA-N (UG/L)	74	170	120	156	26	157	418	177
NITRATE-N (MG/L)	6.05	6.22	6.05	6.59	13.27	7.91	6.05	10.69
SOLUBLE-P (UG/L)	6	9	28	18	6	54	59	43
AVAILABLE-P (UG/L)	9	7	16	14	1	12	26	10
TOTAL-P (UG/L)	84	72	137	90	18	148	182	92
SILICA (MG/L)	8.2	6.2	6.2	6.7	3.1	5.7	4.9	6.9
CHLORIDE (MG/L)	28.5	22.1	22.7	23.5	54.5	29.4	29.7	38.5
DISCHARGE (M3/SEC)	.156	2.49	.116	2.76	.079	.541	9.94	.180
TEMPERATURE (FAHRENHEIT)	38	34	33	35	34	34	32	33
DAY (JULIAN)	3583	3583	3583	3583	3583	3583	3583	3583
WGHT DAY (DAYS)	14	14	14	14	14	14	14	14

SALINE VALLEY January 18, 1989

DATE = 011889	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
pH	7.3	7.5	7.7	7.7	7.8	7.8	7.9	7.9
CONDUCTIVITY (UMOHS)	910	810	780	820	1100	790	920	760
SUS. SOLIDS (MG/L)	14	18	23	26	2	2	19	27
AMMONIA-N (UG/L)	125	83	322	145	15	23	905	1440
NITRATE-N (MG/L)	5.23	6.59	5.43	6.36	11.10	14.51	6.88	8.94
SOLUBLE-P (UG/L)	4	5	10	10	4	5	27	51
AVAILABLE-P (UG/L)	8	6	12	11	2	10	21	8
TOTAL-P (UG/L)	41	57	82	75	15	20	89	144
SILICA (MG/L)	10.1	8.1	7.6	8.2	0.5	3.9	8.6	7.7
CHLORIDE (MG/L)	31.7	24.6	28.1	27.9	127.0	33.2	71.6	38.8
DISCHARGE (M3/SEC)	.037	1.21	.023	1.27	.043	.129	2.18	.087
TEMPERATURE (FAHRENHEIT)	42	36	35	38	33	36	33	34
DAY (JULIAN)	3590	3590	3590	3590	3590	3590	3590	3590
WTGHT DAY (DAYS)	11	11	11	11	11	11	11	11

SALINE VALLEY February 02, 1989

DATE = 020289	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
pH	7.3	7.5	7.7	7.7	7.7	7.7	7.8	7.8
CONDUCTIVITY (UMOHS)	780	780	720	780	880	800	750	760
SUS. SOLIDS (MG/L)	10	12	8	11	2	2	26	9
AMMONIA-N (UG/L)	69	63	57	69	20	24	88	61
NITRATE-N (MG/L)	5.05	4.74	4.23	5.25	7.51	8.63	5.77	6.79
SOLUBLE-P (UG/L)	8	6	12	9	4	4	20°	23
AVAILABLE-P (UG/L)	13	10	11	12	3	1	7	4
TOTAL-P (UG/L)	49	49	54	58	16	13	98	66
SILICA (MG/L)	8.8	6.8	6.0	6.3	3.7	5.4	7.3	7.0
CHLORIDE (MG/L)	32.6	26.3	34.8	29.6	61.3	36.7	46.9	42.2
DISCHARGE (M3/SEC)	.085	1.93	.071	2.09	.155	.239	4.09	.160
TEMPERATURE (FAHRENHEIT)	36	34	32	33	34	34	36	42
DAY (JULIAN)	3605	3605	3605	3605	3605	3605	3605	3605
WTGHT DAY (DAYS)	14	14	14	14	14	14	14	14

SALINE VALLEY February 15, 1989

	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
DATE = 021589								
pH	7.3	7.5	7.7	7.7	7.7	7.8	7.9	7.9
CONDUCTIVITY (UMOHS)	840	820	700	760	900	720	980	600
SUS. SOLIDS (MG/L)	12	17	22	30	1.4	6.6	5.3	33
AMMONIA-N (UG/L)	130	254	1756	627	26	26	54	2570
NITRATE-N (MG/L)	2.79	3.44	2.60	3.16	7.77	10.25	3.20	5.72
SOLUBLE-P (UG/L)	8	8	265	44	8	8	15	113
AVAILABLE-P (UG/L)	12	13	61	22	4	4	4	17
TOTAL-P (UG/L)	42	47	305	142	16	20	67	249
SILICA (MG/L)	8.6	7.3	6.2	7.4	0.6	3.4	7.7	5.7
CHLORIDE (MG/L)	39.7	26.0	34.8	29.2	69.3	28.3	72.8	32.6
DISCHARGE (M3/SEC)	.037	1.03	.026	1.09	.048	.140	1.75	.160
TEMPERATURE (FAHRENHEIT)	39	36	34	36	32	34	32	32
DAY (JULIAN)	3618	3618	3618	3618	3618	3618	3618	3618
WTGHT DAY (DAYS)	10	10	10	10	10	10	10	10

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SALINE VALLEY February 22, 1989

DATE = 022288	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
pH	7.4	7.6	7.8	7.8	7.8	7.8	7.9	7.9
CONDUCTIVITY (UMOHS)	960	860	880	900	840	700	900	820
SUS. SOLIDS (MG/L)	4	10	7	11	1	1	4	7
AMMONIA-N (UG/L)	575	94	56	97	37	33	45	273
NITRATE-N (MG/L)	1.81	3.06	1.90	2.77	6.20	9.10	3.45	6.41
SOLUBLE-P (UG/L)	8	8	8	8	7	7	15	39
AVAILABLE-P (UG/L)	8	9	7	8	2	1	2	8
TOTAL-P (UG/L)	34	34	30	36	15	41	43	95
SILICA (MG/L)	10.5	7.2	5.7	7.9	0.1	2.1	6.3	6.2
CHLORIDE (MG/L)	35.8	26.3	43.8	35.3	60.8	26.5	62.2	43.5
DISCHARGE (M3/SEC)	.017	0.60	.005	0.62	.053	.129	1.65	.140
TEMPERATURE (FAHRENHEIT)	40	34	33	34	32	33	32	32
DAY (JULIAN)	3625	3625	3625	3625	3625	3625	3625	3625
WGHT DAY (DAYS)	10	10	10	10	10	10	10	10

SALINE VALLEY March 8, 1989

DATE = 030889	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
PH	7.4	7.6	7.8	7.8	7.8	7.8	7.9	7.9
CONDUCTIVITY (UMOHMS)	910	850	840	880	1200	710	780	830
SUS. SOLIDS (MG/L)	17	8	9	8	3	1	17	8
AMMONIA-N (UG/L)	214	240	910	530	30	31	1680	680
NITRATE-N (MG/L)	1.69	2.68	3.03	2.67	6.57	6.28	2.66	6.13
SOLUBLE-P (UG/L)	16	20	31	21	11	8	113	80
AVAILABLE-P (UG/L)	19	13	23	13	5	3	26	25
TOTAL-P (UG/L)	51	53	73	52	37	25	160	107
SILICA (MG/L)	10.5	7.1	6.9	8.0	0.1	3.1	5.5	6.9
CHLORIDE (MG/L)	34.4	27.9	34.2	31.7	174.8	24.2	62.3	41.2
DISCHARGE (M3/SEC)	.027	0.77	.065	0.87	.026	.114	2.25	.150
TEMPERATURE (FAHRENHEIT)	39	32	32	32	32	32	32	32
DAY (JULIAN)	3639	3639	3639	3639	3639	3639	3639	3639
WTGHT DAY (DAYS)	15	15	15	15	15	15	15	15

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SALINE VALLEY March 23, 1980

DATE = 032380	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
pH	7.4	7.5	7.6	7.7	7.7	7.7	7.9	7.9
CONDUCTIVITY (UMOHMS)	840	740	720	760	900	800	760	760
SUS. SOLIDS (MG/L)	15	31	8	28	2	3	31	18
AMMONIA-N (UG/L)	72	88	122	100	34	39	205	69
NITRATE-N (MG/L)	3.75	3.75	4.20	4.25	8.82	10.50	5.40	9.83
SOLUBLE-P (UG/L)	8	8	8	8	5	5	15	17
AVAILABLE-P (UG/L)	17	21	18	22	6	5	23	20
TOTAL-P (UG/L)	59	79	76	85	42	40	100	87
SILICA (MG/L)	7.5	6.5	5.3	6.5	1.6	4.1	7.8	6.0
CHLORIDE (MG/L)	32.8	24.6	28.3	27.8	78.9	29.9	40.3	39.4
DISCHARGE (M3/SEC)	.047	1.69	.047	1.79	.120	.204	2.91	.140
TEMPERATURE (FAHRENHEIT)	38	35	35	35	36	38	37	34
DAY (JULIAN)	3654	3654	3654	3654	3654	3654	3654	3654
WGHT DAY (DAYS)	10	10	10	10	10	10	10	10

SALINE VALLEY March 29, 1989

DATE = 032989	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
PH	7.4	7.5	7.6	7.7	7.7	7.8	7.9	7.9
CONDUCTIVITY (UMOHS)	900	780	760	810	960	860	810	860
SUS. SOLIDS (MG/L)	269	123	145	277	11	1	18	247
AMMONIA-N (UG/L)	263	159	134	205	51	46	28	177
NITRATE-N (MG/L)	6.61	5.39	4.53	4.97	8.57	10.29	4.24	9.65
SOLUBLE-P (UG/L)	17	17	17	18	18	17	16	29
AVAILABLE-P (UG/L)	9	9	8	10	5	4	19	10
TOTAL-P (UG/L)	55	59	55	57	47	44	105	36
SILICA (MG/L)	7.2	7.6	7.1	6.9	1.4	4.4	4.4	7.2
CHLORIDE (MG/L)	20.0	17.4	22.6	20.0	66.7	30.1	47.0	27.4
DISCHARGE (M3/SEC)	.819	9.03	.963	10.81	.200	.337	3.27	.772
TEMPERATURE (FAHRENHEIT)	42	40	40	41	42	42	40	39
DAY (JULIAN)	3660	3660	3660	3660	3660	3660	3660	3660
WTGHT DAY (DAYS)	7	7	7	7	7	7	7	7

SALINE VALLEY April 05, 1989

	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
DATE = 040589								
pH	7.4	7.4	7.4	7.5	7.5	7.5	7.6	7.6
CONDUCTIVITY (UMOHS)	620	640	580	740	840	820	620	650
SUS. SOLIDS (MG/L)	35	30	45	49	3	2	89	79
AMMONIA-N (UG/L)	80	60	55	65	26	28	74	53
NITRATE-N (MG/L)	6.57	4.88	5.26	5.47	10.59	10.80	5.24	10.42
SOLUBLE-P (UG/L)	14	14	20	21	8	7	23	27
AVAILABLE-P (UG/L)	24	15	16	18	8	5	24	21
TOTAL-P (UG/L)	95	80	105	105	29	21	145	135
SILICA (MG/L)	7.1	5.8	6.4	6.5	2.4	6.4	6.1	6.6
CHLORIDE (MG/L)	27.8	22.4	25.0	25.0	60.4	27.8	35.3	34.9
DISCHARGE (M3/SEC)	.421	4.94	.504	5.86	.221	.606	10.16	.395
TEMPERATURE (FAHRENHEIT)	45	46	45	46	45	46	48	44
DAY (JULIAN)	3667	3667	3667	3667	3667	3667	3667	3667
WGHT DAY (DAYS)	10	10	10	10	10	10	10	10

SALINE VALLEY April 19, 1989

DATE = 041989	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
pH	7.4	7.4	7.5	7.5	7.6	7.6	7.6	7.7
CONDUCTIVITY (UMOHS)	780	770	700	780	900	760	840	800
SUS. SOLIDS (MG/L)	11	6	10	12	2	3	47	14
AMMONIA-N (UG/L)	47	36	32	98	53	29	44	25
NITRATE-N (MG/L)	3.37	3.22	3.24	3.48	8.57	9.28	3.23	10.96
SOLUBLE-P (UG/L)	8	8	7	7	6	7	13	8
AVAILABLE-P (UG/L)	15	13	12	13	4	4	23	11
TOTAL-P (UG/L)	41	39	39	41	13	13	103	41
SILICA (MG/L)	7.3	5.0	5.1	5.9	0.1	2.4	2.8	6.3
CHLORIDE (MG/L)	33.1	24.7	30.6	29.4	68.9	27.5	52.2	43.0
DISCHARGE (M3/SEC)	.085	1.91	.120	2.11	.113	.237	3.69	.160
TEMPERATURE (FAHRENHEIT)	47	47	48	47	48	48	50	47
DAY (JULIAN)	3681	3681	3681	3681	3681	3681	3681	3681
WTGHT DAY (DAYS)	11	11	11	11	11	11	11	11

SALINE VALLEY April 26, 1989

	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
DATE = 042689								
pH	7.5	7.5	7.5	7.6	7.6	7.7	7.7	7.8
CONDUCTIVITY (UMOHS)	800	740	680	750	840	700	740	700
SUS. SOLIDS (MG/L)	4	8	6	8	1	2	29	10
AMMONIA-N (UG/L)	59	41	33	34	31	30	39	30
NITRATE-N (MG/L)	2.21	2.53	1.69	2.48	5.11	5.74	2.69	4.85
SOLUBLE-P (UG/L)	6	6	6	7	5	6	20	10
AVAILABLE-P (UG/L)	12	10	8	8	5	6	19	10
TOTAL-P (UG/L)	30	31	26	39	22	20	98	35
SILICA (MG/L)	6.1	2.8	2.0	3.4	0.1	1.6	2.6	1.6
CHLORIDE (MG/L)	39.9	25.4	32.8	29.9	64.9	27.2	55.7	42.4
DISCHARGE (M3/SEC)	.045	1.43	.061	1.54	.079	.211	1.92	.098
TEMPERATURE (FAHRENHEIT)	48	48	49	48	50	50	52	49
DAY (JULIAN)	3688	3688	3688	3688	3688	3688	3688	3688
WGHT DAY (DAYS)	7	7	7	7	7	7	7	7

SALINE VALLEY May 03, 1989

DATE = 050389 STA. 3 STA. 3A STA. 4 STA. 5 STA. 6 STA. 7 STA. 8 STA. 9

pH	7.5	7.5	7.6	7.6	7.7	7.7	7.7	7.8
CONDUCTIVITY (UMOHS)	840	740	710	800	820	780	780	720
SUS. SOLIDS (MG/L)	3	5	2	3	2	6	28	4
AMMONIA-N (UG/L)	77	32	24	21	20	20	27	24
NITRATE-N (MG/L)	1.32	2.32	1.40	1.86	1.85	5.38	2.01	3.93
SOLUBLE-P (UG/L)	3	4	4	4	3	3	34	5
AVAILABLE-P (UG/L)	11	8	5	6	4	6	16	9
TOTAL-P (UG/L)	20	20	13	19	36	24	96	29
SILICA (MG/L)	10.2	4.0	3.8	5.0	0.3	0.2	3.6	0.1
CHLORIDE (MG/L)	30.3	17.4	29.9	20.0	20.5	21.8	58.5	41.4
DISCHARGE (M3/SEC)	.023	0.69	.008	0.72	.032	.136	1.31	.052
TEMPERATURE (FAHRENHEIT)	46	47	48	47	49	49	50	47
DAY (JULIAN)	3695	3695	3695	3695	3695	3695	3695	3695
WGHT DAY (DAYS)	7	7	7	7	7	7	7	7

SALINE VALLEY May 10, 1989

DATE = 051089	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
pH	7.5	7.5	7.5	7.6	7.7	7.7	7.8	7.9
CONDUCTIVITY (UMOHMS)	900	840	820	860	920	700	880	780
SUS. SOLIDS (MG/L)	7	6	3	4	2	2	39	4
AMMONIA-N (UG/L)	165	74	34	44	18	18	39	38
NITRATE-N (MG/L)	1.24	2.29	1.28	1.98	3.13	4.95	2.24	3.83
SOLUBLE-P (UG/L)	6	6	6	6	6	6	21	8
AVAILABLE-P (UG/L)	17	14	9	12	4	4	27	10
TOTAL-P (UG/L)	20	24	19	20	16	12	108	39
SILICA (MG/L)	10.9	5.8	5.3	7.0	4.0	3.0	3.9	0.6
CHLORIDE (MG/L)	30.3	25.4	28.5	28.2	71.1	21.2	61.3	44.7
DISCHARGE (M3/SEC)	.021	0.58	.005	0.61	.031	.133	1.13	.049
TEMPERATURE (FAHRENHEIT)	44	43	45	43	48	49	49	45
DAY (JULIAN)	3702	3702	3702	3702	3702	3702	3702	3702
WTGHT DAY (DAYS)	11	11	11	11	11	11	11	11

SALINE VALLEY May 24, 1989

	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
DATE = 052489								
pH	7.5	7.5	7.7	7.7	7.8	7.8	7.9	7.9
CONDUCTIVITY (UMOHS)	840	640	620	680	700	580	700	620
SUS. SOLIDS (MG/L)	4	8	5	7	4	15	20	5
AMMONIA-N (UG/L)	191	70	34	75	37	35	54	88
NITRATE-N (MG/L)	0.65	1.68	0.77	1.34	1.26	4.26	2.18	2.47
SOLUBLE-P (UG/L)	4	5	4	5	5	5	41	27
AVAILABLE-P (UG/L)	16	15	10	10	8	9	18	6
TOTAL-P (UG/L)	41	39	33	33	45	415	136	69
SILICA (MG/L)	11.7	7.1	5.7	7.9	4.0	5.3	6.7	2.8
CHLORIDE (MG/L)	28.7	25.1	28.7	27.5	79.4	22.5	63.3	40.1
DISCHARGE (M3/SEC)	.011	0.45	.002	0.47	.038	.112	1.011	.044
TEMPERATURE (FAHRENHEIT)	53	55	57	51	59	62	59	55
DAY (JULIAN)	3716	3716	3716	3716	3716	3716	3716	3716
WGHT DAY (DAYS)	14	14	14	14	14	14	14	14

SALINE VALLEY June 7, 1989

DATE = 060789	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
pH	7.5	7.5	7.6	7.6	7.7	7.7	7.8	7.8
CONDUCTIVITY (UMOHS)	580	540	460	560	600	450	570	600
SUS. SOLIDS (MG/L)	74	44	58	53	4	4	56	74
AMMONIA-N (UG/L)	250	109	115	127	169	141	127	161
NITRATE-N (MG/L)	1.67	2.26	1.39	2.59	6.50	5.79	3.85	7.51
SOLUBLE-P (UG/L)	6	6	5	6	12	7	9	11
AVAILABLE-P (UG/L)	25	22	25	27	12	8	22	34
TOTAL-P (UG/L)	147	136	140	135	121	101	152	187
SILICA (MG/L)	8.8	7.4	8.3	8.0	9.5	8.9	9.1	8.5
CHLORIDE (MG/L)	21.2	15.5	16.7	17.9	30.3	15.3	25.3	27.2
DISCHARGE (M3/SEC)	.457	4.06	.233	4.75	.266	.623	13.99	.220
TEMPERATURE (FAHRENHEIT)	58	62	62	60	64	64	64	60
DAY (JULIAN)	3730	3730	3730	3730	3730	3730	3730	3730
WTGHT DAY (DAYS)	10	10	10	10	10	10	10	10

SALINE VALLEY June 14, 1989

DATE = 061489	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
pH	7.3	7.4	7.4	7.5	7.6	7.6	7.6	7.7
CONDUCTIVITY (UMOHMS)	820	680	720	760	740	640	760	780
SUS. SOLIDS (MG/L)	23	44	37	56	4	10	91	26
AMMONIA-N (UG/L)	408	130	121	110	112	678	77	60
NITRATE-N (MG/L)	1.47	2.10	1.55	2.01	3.66	2.87	2.42	4.64
SOLUBLE-P (UG/L)	22	11	20	12	58	55	34	30
AVAILABLE-P (UG/L)	28	24	24	22	7	5	28	18
TOTAL-P (UG/L)	112	113	119	121	108	125	171	111
SILICA (MG/L)	11.8	8.4	9.8	9.2	12.5	12.9	10.1	10.3
CHLORIDE (MG/L)	27.3	18.4	25.3	22.9	38.8	19.3	38.0	35.7
DISCHARGE (M3/SEC)	.105	1.75	.035	1.89	.095	.188	2.72	.110
TEMPERATURE (FAHRENHEIT)	53	67	57	67	68	58	58	67
DAY (JULIAN)	3737	3737	3737	3737	3737	3737	3737	3737
WTGHT DAY (DAYS)	7	7	7	7	7	7	7	7

SALINE VALLEY June 21, 1989

DATE = 062189	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
pH	7.3	7.3	7.3	7.4	7.4	7.4	7.4	7.5
CONDUCTIVITY (UMOHS)	920	760	750	820	540	410	620	840
SUS. SOLIDS (MG/L)	28	45	49	59	7	4	74	40
AMMONIA-N (UG/L)	411	90	57	76	67	411	96	86
NITRATE-N (MG/L)	1.75	2.31	1.60	2.34	6.25	3.56	3.86	8.51
SOLUBLE-P (UG/L)	7	7	11	7	39	19	32	24
AVAILABLE-P (UG/L)	37	32	36	38	12	11	42	26
TOTAL-P (UG/L)	95	101	129	117	108	92	168	116
SILICA (MG/L)	12.1	9.4	10.0	10.0	9.0	5.9	9.0	9.6
CHLORIDE (MG/L)	30.9	21.9	31.8	27.2	24.8	11.5	34.9	43.3
DISCHARGE (M3/SEC)	.043	1.32	.022	1.38	.597	.478	7.48	.110
TEMPERATURE (FAHRENHEIT)	53	59	60	58	64	65	66	60
DAY (JULIAN)	3744	3744	3744	3744	3744	3744	3744	3744
WTGHT DAY (DAYS)	7	7	7	7	7	7	7	7

SALINE VALLEY June 28, 1989

DATE = 062889 STA. 3 STA. 3A STA. 4 STA. 5 STA. 6 STA. 7 STA. 8 STA. 9

pH	7.3	7.5	7.6	7.6	7.7	7.6	7.7	7.8
CONDUCTIVITY (UMOHMS)	980	880	860	900	780	600	860	880
SUS. SOLIDS (MG/L)	28	51	45	56	1	1	54	40
AMMONIA-N (UG/L)	204	89	40	73	28	185	55	71
NITRATE-N (MG/L)	1.61	2.43	1.51	2.17	3.34	3.06	2.45	6.25
SOLUBLE-P (UG/L)	7	8	8	9	58	49	36	33
AVAILABLE-P (UG/L)	35	38	42	36	11	8	38	30
TOTAL-P (UG/L)	77	105	112	103	105	129	153	120
SILICA (MG/L)	12.7	10.3	11.2	10.9	14.0	11.6	10.6	10.6
CHLORIDE (MG/L)	33.0	22.5	27.9	26.5	34.4	13.9	46.8	38.5
DISCHARGE (M3/SEC)	.033	0.62	.008	0.87	.107	.186	1.97	.093
TEMPERATURE (FAHRENHEIT)	63	69	61	68	65	67	68	62
DAY (JULIAN)	3751	3751	3751	3751	3751	3751	3751	3751
WGHT DAY (DAYS)	8	8	8	8	8	8	8	8

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SALINE VALLEY July 6, 1989

DATE = 070689	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
pH	7.4	7.5	7.6	7.6	7.8	7.8	7.8	7.8
CONDUCTIVITY (UMOHMS)	1000	900	980	900	800	660	820	950
SUS. SOLIDS (MG/L)	13	36	12	46	5	1	64	31
AMMONIA-N (UG/L)	116	67	7	38	16	32	31	24
NITRATE-N (MG/L)	1.07	20.6	1.15	1.59	0.71	5.22	1.82	4.27
SOLUBLE-P (UG/L)	10	10	9	10	43	38	34	34
AVAILABLE-P (UG/L)	23	28	29	27	11	7	30	20
TOTAL-P (UG/L)	67	44	79	92	145	99	88	85
SILICA (MG/L)	12.7	10.3	12.7	11.8	15.9	15.0	10.7	9.1
CHLORIDE (MG/L)	29.9	22.7	29.2	26.2	33.4	20.5	44.8	42.7
DISCHARGE (M3/SEC)	.011	0.46	.001	0.47	.041	.107	1.47	.055
TEMPERATURE (FAHRENHEIT)	62	64	66	65	69	68	70	67
DAY (JULIAN)	3759	3759	3759	3759	3759	3759	3759	3759
WTGHT DAY (DAYS)	14	14	14	14	14	14	14	14

SALINE VALLEY July 26, 1989

SALINE VALLEY August 2, 1989

DATE = 080289	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
pH	7.6	7.7	7.8	7.8	7.8	7.8	7.9	7.9
CONDUCTIVITY (UMOHMS)	970	980	980	980	800	660	880	920
SUS. SOLIDS (MG/L)	24	22	10	31	2	3	56	14
AMMONIA-N (UG/L)	173	80	40	64	22	28	38	39
NITRATE-N (MG/L)	1.27	2.11	1.24	1.94	4.88	6.25	3.45	5.33
SOLUBLE-P (UG/L)	9	9	9	10	23	17	41	36
AVAILABLE-P (UG/L)	36	27	18	30	11	8	29	20
TOTAL-P (UG/L)	71	65	47	83	85	65	154	103
SILICA (MG/L)	12.6	10.8	12.3	11.3	6.6	10.3	11.4	10.4
CHLORIDE (MG/L)	32.9	25.1	36.1	28.2	40.0	18.5	49.3	42.7
DISCHARGE (M3/SEC)	.027	0.63	.001	0.65	.071	.250	1.64	.072
TEMPERATURE (FAHRENHEIT)	55	59	64	59	65	66	66	64
DAY (JULIAN)	3786	3786	3786	3786	3786	3786	3786	3786
WGHT DAY (DAYS)	7	7	7	7	7	7	7	7

SALINE VALLEY August 9, 1989

DATE = 080989 STA. 3 STA. 3A STA. 4 STA. 5 STA. 6 STA. 7 STA. 8 STA. 9

pH	7.6	7.7	7.8	7.8	7.8	7.8	7.9	8.0
CONDUCTIVITY (UMOHS)	1000	950	940	920	820	640	920	880
SUS. SOLIDS (MG/L)	8	11	9	28	2	1	53	12
AMMONIA-N (UG/L)	127	67	52	71	38	41	47	48
NITRATE-N (MG/L)	1.25	2.08	0.93	1.61	2.60	5.79	2.30	4.08
SOLUBLE-P (UG/L)	9	8	7	7	19	13	55	34
AVAILABLE-P (UG/L)	10	18	9	21	5	4	26	15
TOTAL-P (UG/L)	26	47	40	78	65	47	161	97
SILICA (MG/L)	13.6	10.3	11.7	11.0	4.4	8.9	11.3	8.3
CHLORIDE (MG/L)	31.7	25.6	31.9	28.5	43.1	19.7	58.7	45.9
DISCHARGE (M3/SEC)	.013	0.41	.001	0.43	.028	.133	1.10	.049
TEMPERATURE (FAHRENHEIT)	50	54	57	56	57	60	61	58
DAY (JULIAN)	3793	3793	3793	3793	3793	3793	3793	3793
WTGHT DAY (DAYS)	7	7	7	7	7	7	7	7

SALINE VALLEY August 16, 1989

DATE = 081689	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
pH	7.7	7.8	7.8	7.8	7.9	7.9	8.0	8.0
CONDUCTIVITY (UMOHMS)	1000	910	900	910	840	680	920	880
SUS. SOLIDS (MG/L)	5	9	6	14	3	2	48	15
AMMONIA-N (UG/L)	118	50	23	40	23	23	27	30
NITRATE-N (MG/L)	0.93	1.55	0.43	1.16	5.78	6.00	1.76	3.39
SOLUBLE-P (UG/L)	10	9	9	9	17	17	52	29
AVAILABLE-P (UG/L)	13	14	7	11	5	3	33	14
TOTAL-P (UG/L)	23	44	35	35	63	44	166	78
SILICA (MG/L)	13.4	10.0	12.2	10.3	10.2	10.1	9.9	7.3
CHLORIDE (MG/L)	31.5	25.1	27.3	28.1	20.6	20.5	57.1	43.9
DISCHARGE (M3/SEC)	.011	0.49	.001	0.50	.016	.114	1.02	.058
TEMPERATURE (FAHRENHEIT)	52	57	59	67	62	61	65	61
DAY (JULIAN)	3800	3800	3800	3800	3800	3800	3800	3800
WGHT DAY (DAYS)	11	11	11	11	11	11	11	11

SALINE VALLEY August 30, 1989

DATE = 083089 STA. 3 STA. 3A STA. 4 STA. 5 STA. 6 STA. 7 STA. 8 STA. 9

pH	7.3	7.3	7.3	7.4	7.4	7.4	7.4	7.5
CONDUCTIVITY (UMOHMS)	1000	980	880	960	1000	660	920	860
SUS. SOLIDS (MG/L)	3.6	5.0	9.1	15	4.7	2.7	85	17
AMMONIA-N (UG/L)	452	88	40	77	46	34	37	65
NITRATE-N (MG/L)	0.67	1.38	0.80	1.01	0.25	5.28	1.79	1.92
SOLUBLE-P (UG/L)	6	5	6	8	120	40	53	58
AVAILABLE-P (UG/L)	15	8	7	11	7	3	33	17
TOTAL-P (UG/L)	49	35	31	46	207	76	197	158
SILICA (MG/L)	13.3	11.8	12.1	11.5	27.7	16.7	9.1	8.7
CHLORIDE (MG/L)	32.5	25.4	24.4	28.9	88.6	39.7	67.3	40.3
DISCHARGE (M3/SEC)	.010	0.32	.001	0.32	.012	.099	1.29	.052
TEMPERATURE (FAHRENHEIT)	51	57	59	58	66	63	66	62
DAY (JULIAN)	3814	3814	3814	3814	3814	3814	3814	3814
WTGHT DAY (DAYS)	10	10	10	10	10	10	10	10

SALINE VALLEY September 6, 1988

DATE = 090689	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
pH	7.4	7.4	7.5	7.5	7.5	7.5	7.6	7.6
CONDUCTIVITY (UMOHS)	1000	1000	960	990	920	680	920	920
SUS. SOLIDS (MG/L)	3.8	13	9.4	20	2.7	3.2	51	12
AMMONIA-N (UG/L)	91	78	42	71	42	34	34	35
NITRATE-N (MG/L)	0.86	1.33	0.45	0.89	0.17	5.55	1.75	2.54
SOLUBLE-P (UG/L)	6	6	6	8	98	28	52	36
AVAILABLE-P (UG/L)	9	13	13	15	5	4	17	9
TOTAL-P (UG/L)	26	38	31	47	161	72	157	92
SILICA (MG/L)	13.2	11.0	12.5	10.8	2.1	15.6	10.0	7.9
CHLORIDE (MG/L)	32.5	25.4	30.3	28.5	59.8	24.9	59.0	44.5
DISCHARGE (M3/SEC)	.011	0.32	.001	0.33	.012	.090	0.96	.049
TEMPERATURE (FAHRENHEIT)	54	59	60	60	65	63	65	63
DAY (JULIAN)	3821	3821	3821	3821	3821	3821	3821	3821
WGHT DAY (DAYS)	11	11	11	11	11	11	11	11

SALINE VALLEY September 19, 1989

DATE = 091989	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
PH	7.4	7.5	7.5	7.6	7.6	7.7	7.7	7.8
CONDUCTIVITY (UMOHS)	780	920	1000	900	940	840	840	850
SUS. SOLIDS (MG/L)	27	29	25	46	1.7	0.8	58	24
AMMONIA-N (UG/L)	86	91	62	85	32	33	71	65
NITRATE-N (MG/L)	3.78	2.44	2.44	3.24	4.04	10.18	2.90	6.12
SOLUBLE-P (UG/L)	9	5	8	9	22	7	34	79
AVAILABLE-P (UG/L)	27	24	22	27	6	3	21	25
TOTAL-P (UG/L)	94	76	71	108	61	39	154	179
SILICA (MG/L)	12.1	10.7	12.2	11.7	12.3	11.8	11.5	11.4
CHLORIDE (MG/L)	29.7	26.2	41.0	30.1	56.2	27.5	46.4	41.3
DISCHARGE (M3/SEC)	.060	1.17	.006	1.23	.053	.235	2.76	.130
TEMPERATURE (FAHRENHEIT)	54	52	54	53	57	57	56	55
DAY (JULIAN)	3834	3834	3834	3834	3834	3834	3834	3834
WTGHT DAY (DAYS)	13	13	13	13	13	13	13	13

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SALINE VALLEY October 4, 1989

DATE • 100489	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
pH	7.6	7.6	7.7	7.8	7.8	7.8	7.9	8.0
CONDUCTIVITY (UMOHS)	880	920	900	920	860	700	980	880
SUS. SOLIDS (MG/L)	3.8	16	4.2	12	3.8	1.8	17	4.4
AMMONIA-N (UG/L)	109	95	34	62	38	32	34	34
NITRATE-N (MG/L)	0.90	1.62	0.36	1.16	1.73	11.10	2.17	2.29
SOLUBLE-P (UG/L)	5	6	5	7	17	12	32	28
AVAILABLE-P (UG/L)	11	16	15	8	8	5	14	9
TOTAL-P (UG/L)	19	42	24	31	223	35	102	74
SILICA (MG/L)	13.1	11.8	11.3	11.8	11.4	9.2	11.7	8.3
CHLORIDE (MG/L)	28.8	25.8	29.4	29.3	56.7	28.4	72.6	48.8
DISCHARGE (M3/SEC)	.011	0.39	.001	0.41	.010	.101	1.64	.049
TEMPERATURE (FAHRENHEIT)	44	40	41	41	40	44	48	42
DAY (JULIAN)	3849	3849	3849	3849	3849	3849	3849	3849
WGHT DAY (DAYS)	15	15	15	15	15	15	15	15

42

SALINE VALLEY October 18, 1969

DATE = 101868	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
PH	7.1	7.2	7.2	7.3	7.3	7.4	7.4	7.5
CONDUCTIVITY (UMOHS)	880	860	800	820	780	560	880	740
SUS. SOLIDS (MG/L)	6.4	16	2.6	4.6	4.4	8.2	6.6	3.4
AMMONIA-N (UG/L)	138	72	47	42	46	37	36	30
NITRATE-N (MG/L)	0.86	1.53	0.44	1.12	1.70	9.70	1.48	0.92
SOLUBLE-P (UG/L)	7	7	6	6	12	10	15	9
AVAILABLE-P (UG/L)	8	11	5	7	5	6	40	6
TOTAL-P (UG/L)	14	35	21	23	47	35	87	55
SILICA (MG/L)	12.7	12.0	11.7	12.1	12.9	9.3	12.9	9.3
CHLDRIDE (MG/L)	29.1	25.0	25.8	27.2	58.2	29.2	77.2	41.5
DISCHARGE (M3/SEC)	.011	0.46	.001	0.48	.010	.109	1.22	.068
TEMPERATURE (FAHRENHEIT)	43	40	40	40	39	43	47	40
DAY (JULIAN)	3863	3863	3863	3863	3863	3863	3863	3863
WGHT DAY (DAYS)	10	10	10	10	10	10	10	10

SALINE VALLEY October 24, 1989

DATE • 102489	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
pH	7.2	7.3	7.3	7.4	7.4	7.5	7.5	7.5
CONDUCTIVITY (UMOHMS)	880	860	830	840	840	740	860	800
SUS. SOLIDS (MG/L)	5.2	5.8	5.0	5.0	4.5	2.2	2.9	2.2
AMMONIA-N (UG/L)	147	65	35	58	39	32	37	43
NITRATE-N (MG/L)	1.25	1.73	0.70	1.39	4.23	11.05	2.65	2.76
SOLUBLE-P (UG/L)	6	6	6	6	9	8	16	15
AVAILABLE-P (UG/L)	15	9	8	11	8	5	33	19
TOTAL-P (UG/L)	17	26	26	26	42	26	60	44
SILICA (MG/L)	12.7	10.5	11.2	11.0	11.7	10.0	10.0	7.5
CHLORIDE (MG/L)	32.7	22.4	30.5	30.8	57.5	28.6	23.1	42.5
DISCHARGE (M3/SEC)	.011	0.55	.001	0.56	.028	.178	1.42	.068
TEMPERATURE (FAHRENHEIT)	49	47	48	46	50	50	45	46
DAY (JULIAN)	3869	3869	3869	3869	3869	3869	3869	3869
WGHT DAY (DAYS)	10	10	10	10	10	10	10	10

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SALINE VALLEY November 8, 1989

DATE = 110888 STA. 3 STA. 3A STA. 4 STA. 5 STA. 6 STA. 7 STA. 8 STA. 9

pH	7.2	7.2	7.3	7.3	7.4	7.4	7.5	7.5
CONDUCTIVITY (UMOHS)	820	860	850	820	780	740	880	780
SUS. SOLIDS (MG/L)	13	34	23	24	2.0	1.4	3.3	16
AMMONIA-N (UG/L)	178	118	39	174	44	36	37	63
NITRATE-N (MG/L)	1.99	2.89	4.03	4.07	3.88	8.82	1.91	9.18
SOLUBLE-P (UG/L)	8	8	7	9	10	7	10	18
AVAILABLE-P (UG/L)	9	18	19	21	6	4	27	14
TOTAL-P (UG/L)	49	68	89	93	36	14	50	86
SILICA (MG/L)	10.8	9.6	9.2	10.1	10.3	7.1	5.9	9.3
CHLORIDE (MG/L)	46.2	28.3	52.1	42.1	56.2	29.7	70.3	45.1
DISCHARGE (M3/SEC)	.025	1.19	.017	1.23	.023	.170	1.53	.120
TEMPERATURE (FAHRENHEIT)	43	41	40	41	41	43	41	40
DAY (JULIAN)	3884	3884	3884	3884	3884	3884	3884	3884
WGHT DAY (DAYS)	15	15	15	15	15	15	15	15

SALINE VALLEY November 16, 1989

DATE = 111689	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
pH	7.3	7.3	7.4	7.4	7.4	7.4	7.6	7.6
CONDUCTIVITY (UMOHS)	600	710	680	700	800	840	820	600
SUS. SOLIDS (MG/L)	117	86	106	143	16	23	21	147
AMMONIA-N (UG/L)	187	149	81	152	39	51	36	387
NITRATE-N (MG/L)	8.34	4.66	7.90	6.13	5.36	10.54	3.34	8.60
SOLUBLE-P (UG/L)	133	84	159	133	40	19	23	216
AVAILABLE-P (UG/L)	25	21	13	20	7	6	10	22
TOTAL-P (UG/L)	258	233	282	273	126	74	100	455
SILICA (MG/L)	8.3	8.1	8.5	8.3	8.5	8.5	7.5	7.6
CHLORIDE (MG/L)	39.3	26.3	42.3	35.7	52.7	39.4	54.6	37.5
DISCHARGE (M3/SEC)	.538	5.83	.408	6.78	.388	.351	2.91	.795
TEMPERATURE (FAHRENHEIT)	38	36	37	38	40	40	41	38
DAY (JULIAN)	3892	3892	3892	3892	3892	3892	3892	3892
WGHT DAY (DAYS)	8	8	8	8	8	8	8	8

SALINE VALLEY November 30, 1989

DATE = 113089 STA. 3 STA. 3A STA. 4 STA. 5 STA. 6 STA. 7 STA. 8 STA. 9

pH	7.3	7.4	7.4	7.5	7.5	7.5	7.6	7.6
CONDUCTIVITY (UMOHS)	780	820	780	800	780	800	860	810
SUS. SOLIDS (MG/L)	26	25	5.8	18	2.5	2.4	4.2	11
AMMONIA-N (UG/L)	174	224	192	184	78	113	121	153
NITRATE-N (MG/L)	3.02	2.38	2.24	2.74	7.68	9.65	3.53	8.80
SOLUBLE-P (UG/L)	5	5	13	8	9	9	22	149
AVAILABLE-P (UG/L)	13	14	8	13	7	6	33	17
TOTAL-P (UG/L)	30	59	24	36	36	14	49	64
SILICA (MG/L)	12.4	9.6	10.1	10.5	9.3	7.2	10.5	10.0
CHLORIDE (MG/L)	38.5	26.0	50.0	33.9	62.3	25.7	56.0	46.4
DISCHARGE (M3/SEC)	.033	0.82	.010	0.87	.043	.197	2.13	.095
TEMPERATURE (FAHRENHEIT)	35	30	29	30	28	30	30	28
DAY (JULIAN)	3906	3906	3906	3906	3906	3906	3906	3906
WGHT DAY (DAYS)	7	7	7	7	7	7	7	7

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SALINE VALLEY December 6, 1989

DATE = 120689	STA. 3	STA. 3A	STA. 4	STA. 5	STA. 6	STA. 7	STA. 8	STA. 9
pH	7.0	7.5	7.6	7.7	7.7	7.7	7.7	7.8
CONDUCTIVITY (UMOHMS)	960	860	880	900	840	700	900	820
SUS. SOLIDS (MG/L)	9.0	20	4.3	12	3.7	2.4	3.8	7.2
AMMONIA-N (UG/L)	478	156	58	144	44	36	63	76
NITRATE-N (MG/L)	1.98	1.95	1.62	2.09	7.29	8.72	3.57	7.29
SOLUBLE-P (UG/L)	4	5	5	4	5	4	15	92
AVAILABLE-P (UG/L)	17	19	26	15	7	8	8	12
TOTAL-P (UG/L)	30	59	23	36	36	14	49	64
SILICA (MG/L)	12.2	9.5	9.2	10.3	8.9	5.4	10.0	9.2
CHLORIDE (MG/L)	36.2	25.7	39.1	31.4	51.0	25.7	58.8	45.1
DISCHARGE (M3/SEC)	.021	0.60	.005	0.62	.024	.150	1.64	.079
TEMPERATURE (FAHRENHEIT)	38	33	31	32	28	31	28	28
DAY (JULIAN)	3912	3912	3912	3912	3912	3912	3912	3912
WGHT DAY (DAYS)	14	14	14	14	14	14	14	14

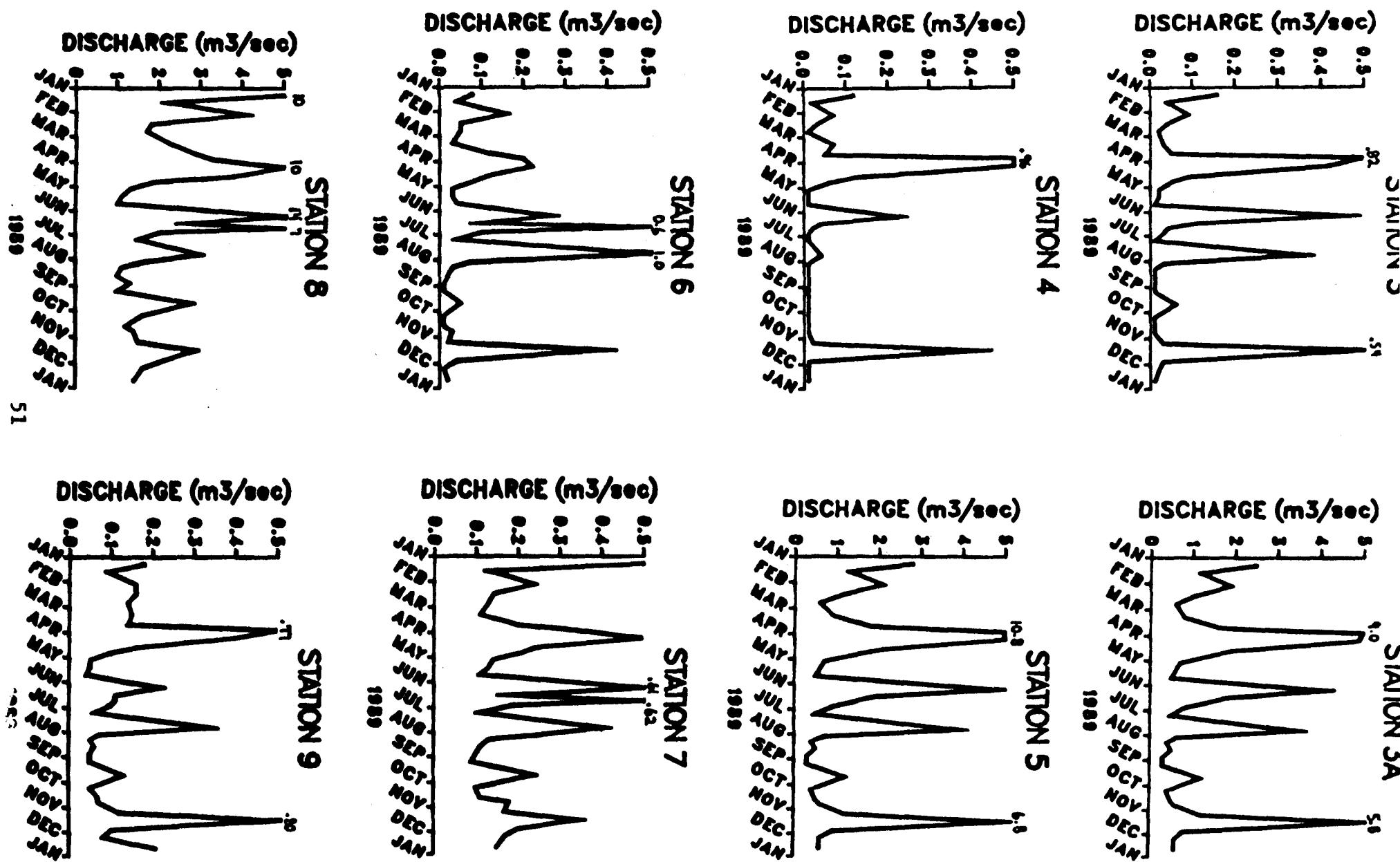
SALINE VALLEY December 20, 1989

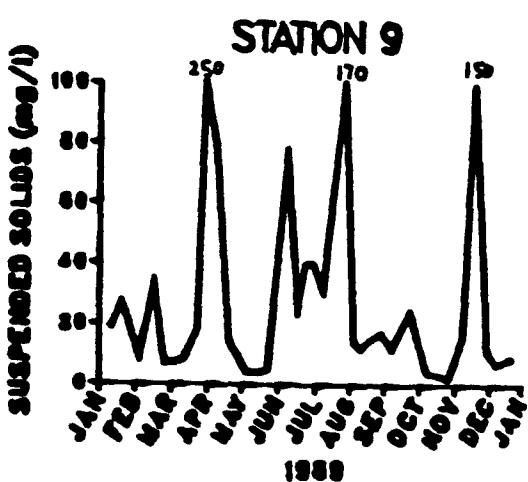
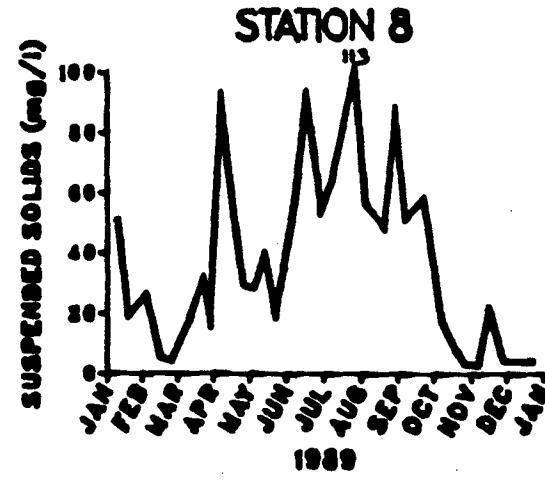
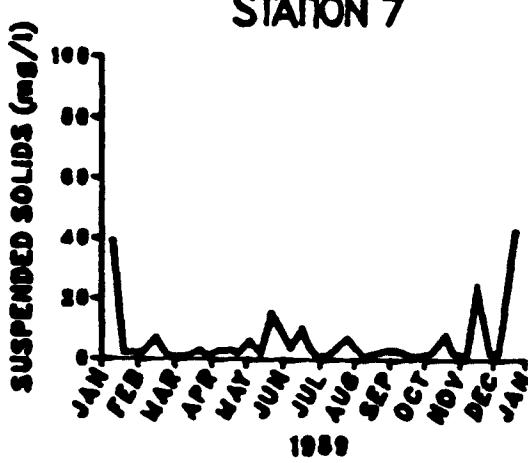
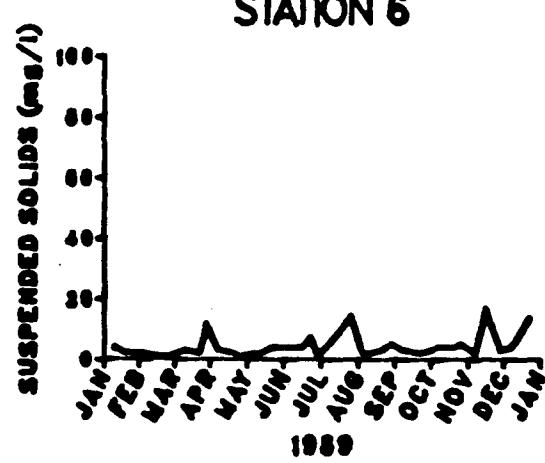
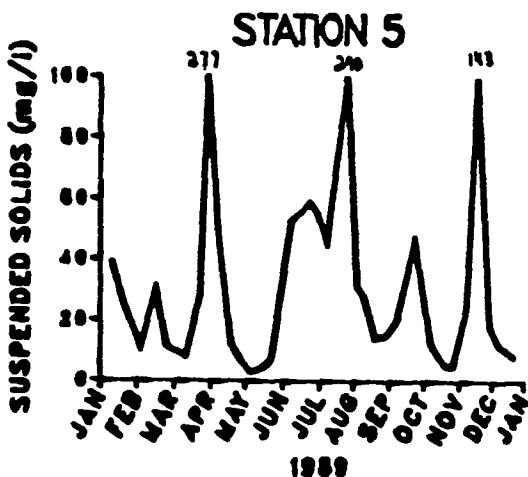
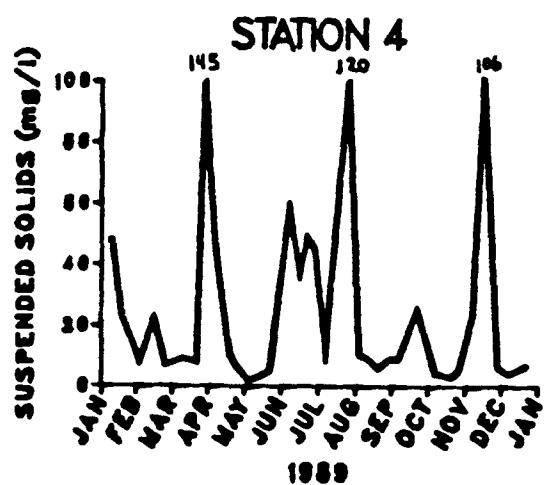
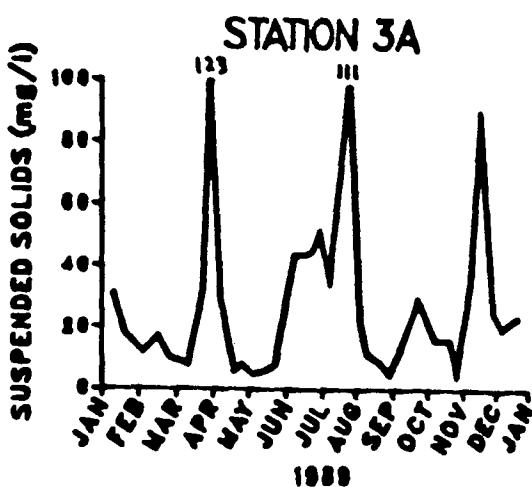
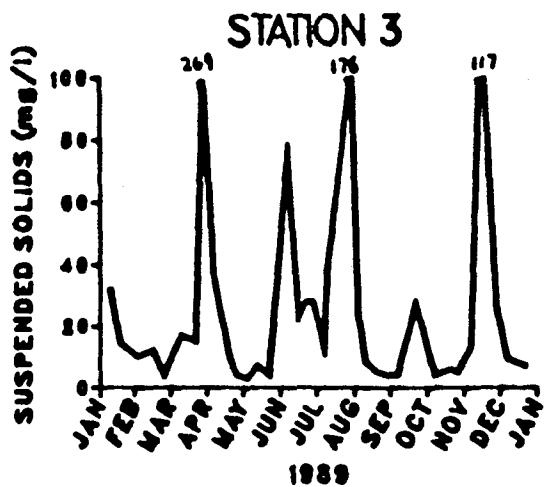
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pH	7.4	7.5	7.6	7.7	7.7	7.8	7.8	7.9
CONDUCTIVITY (UMOMS)	810	820	820	820	910	680	830	810
SUS. SOLIDS (MG/L)	7.2	24	6.8	7.6	14	43	3.5	9.3
AMMONIA-N (UG/L)	183	199	116	147	1013	80	183	41
NITRATE-N (MG/L)	1.18	1.95	1.45	1.75	4.45	8.40	3.25	6.30
SOLUBLE-P (UG/L)	6	9	7	12	11	11	33	42
AVAILABLE-P (UG/L)	15	18	12	15	7	7	19	15
TOTAL-P (UG/L)	27	55	11	22	36	64	46	58
SILICA (MG/L)	13.2	11.6	12.6	12.0	12.2	11.1	10.1	11.4
CHLORIDE (MG/L)	31.1	25.7	31.5	29.0	58.9	24.2	80.6	51.9
DISCHARGE (M3/SEC)	.011	0.59	.005	0.61	.006	.170	1.42	.210
TEMPERATURE (FAHRENHEIT)	34	28	28	28	28	28	28	28
DAY (JULIAN)	3926	3926	3926	3926	3926	3926	3926	3926
WTGHT DAY (DAYS)	16	16	16	16	16	16	16	16

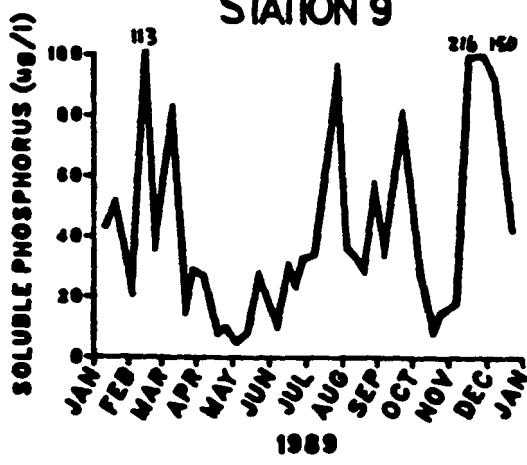
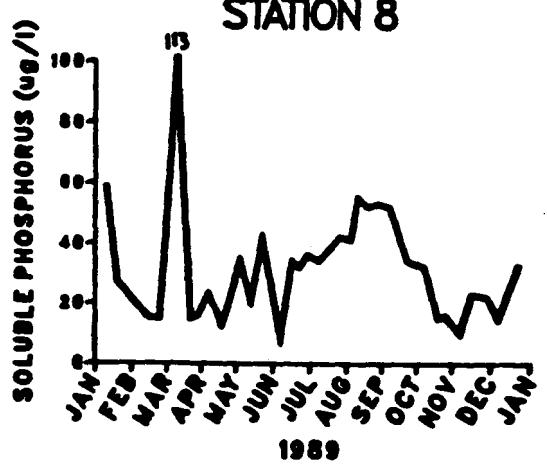
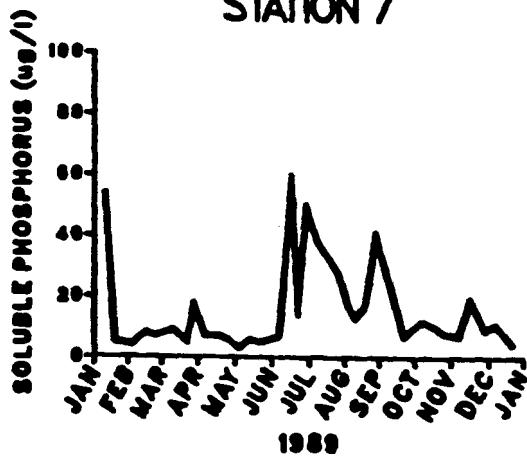
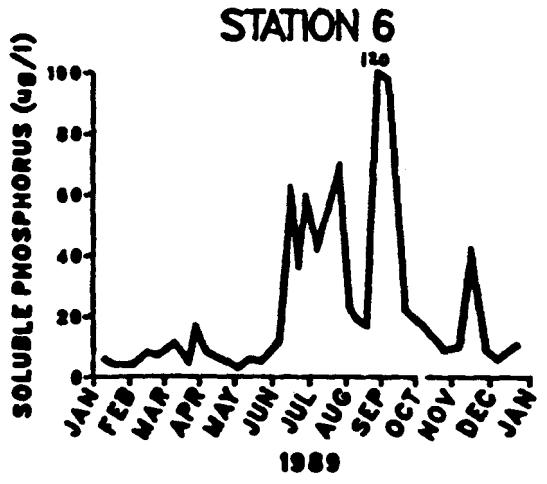
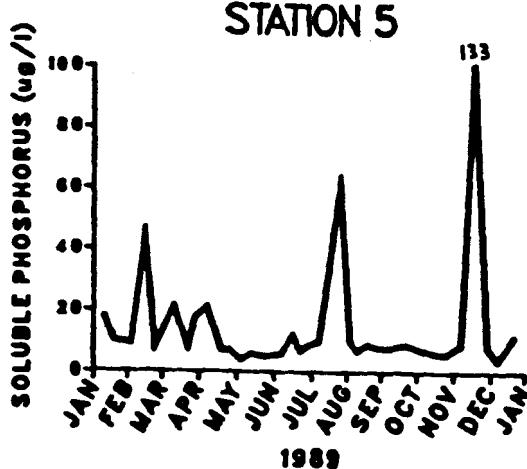
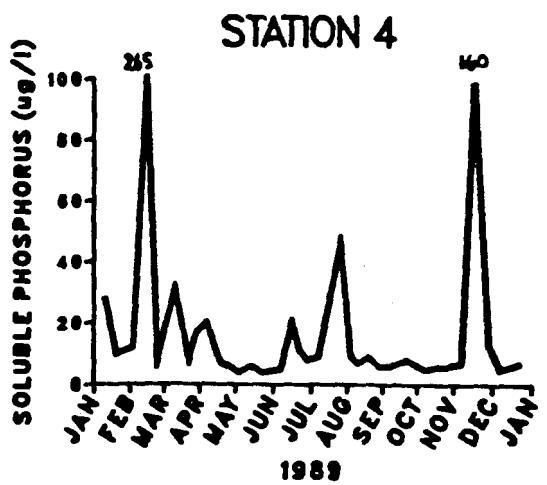
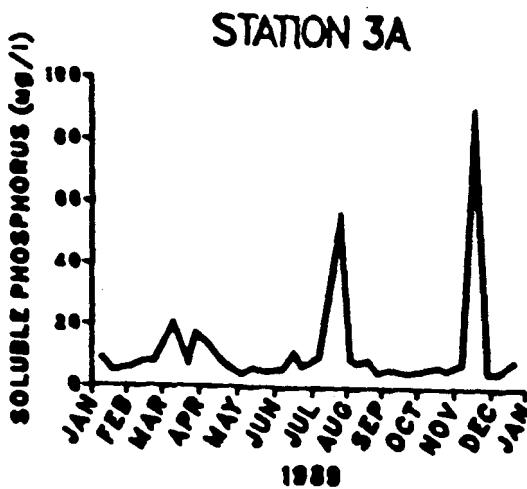
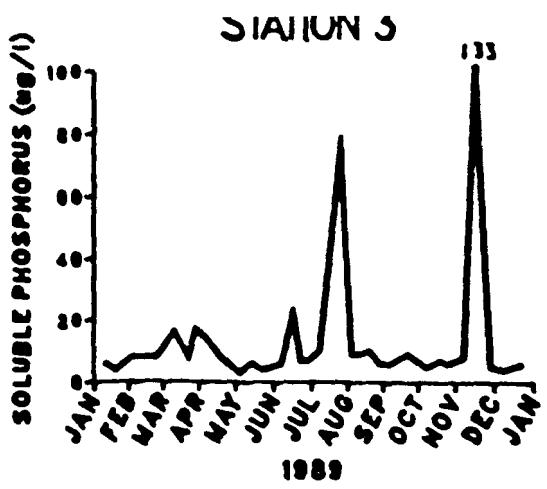
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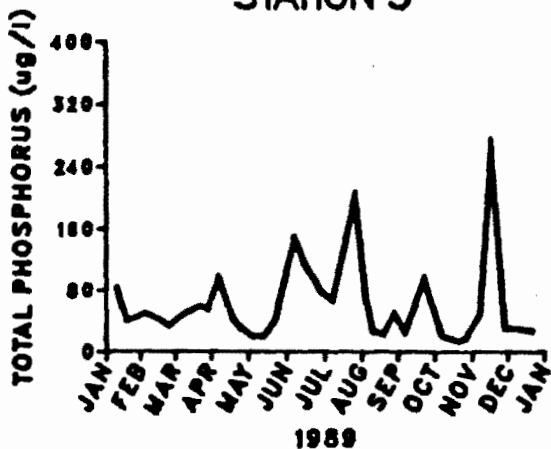
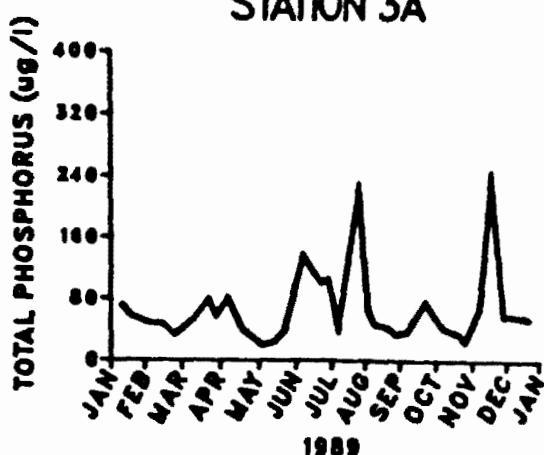
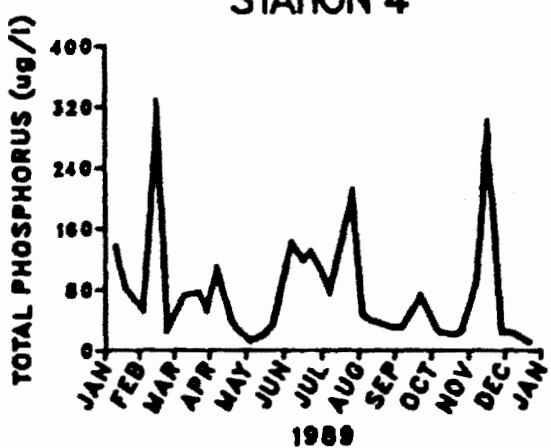
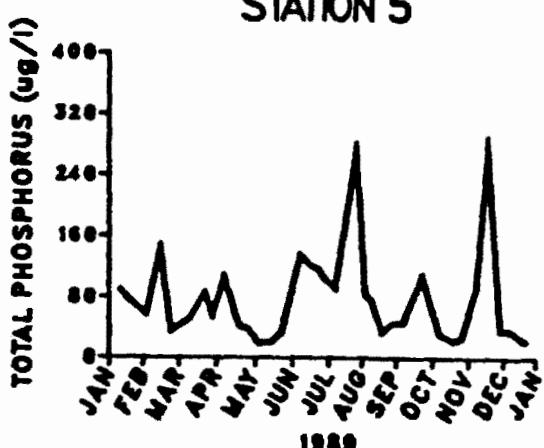
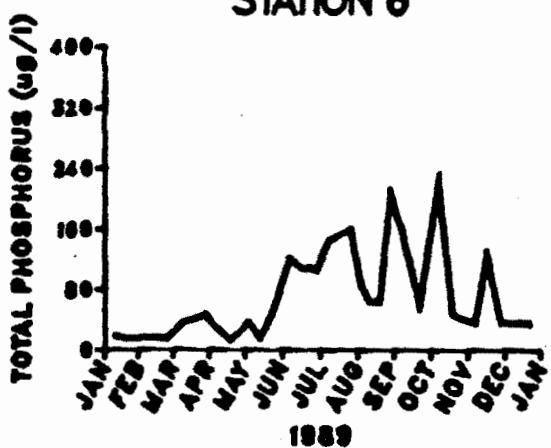
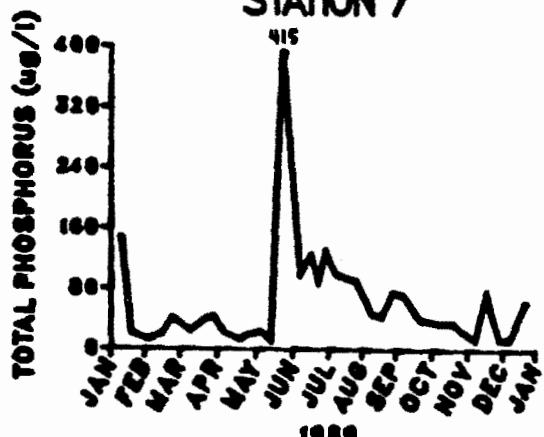
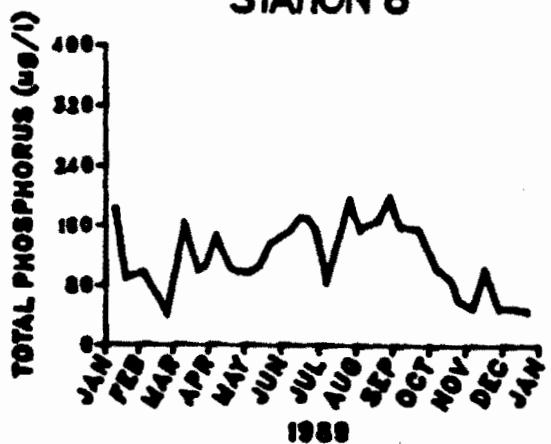
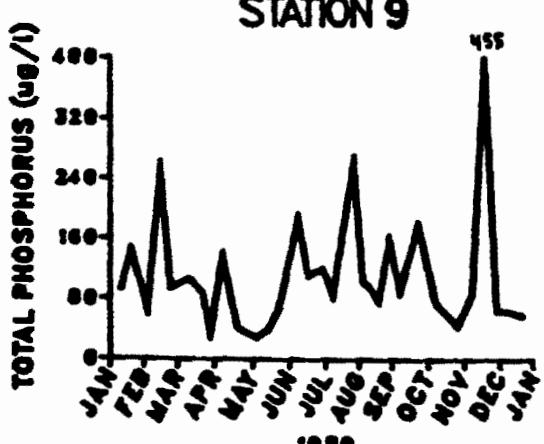
APPENDIX C

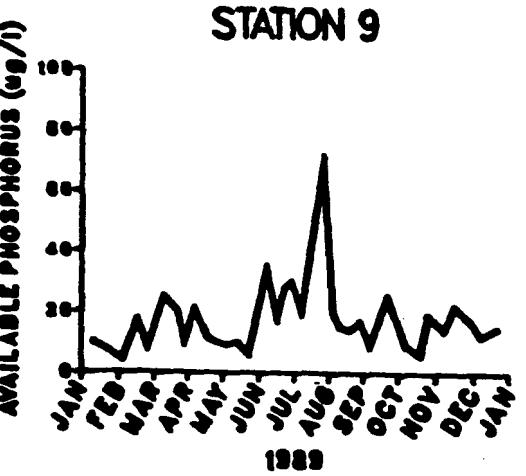
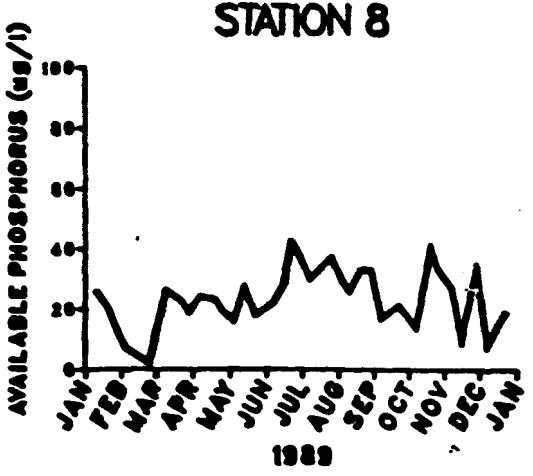
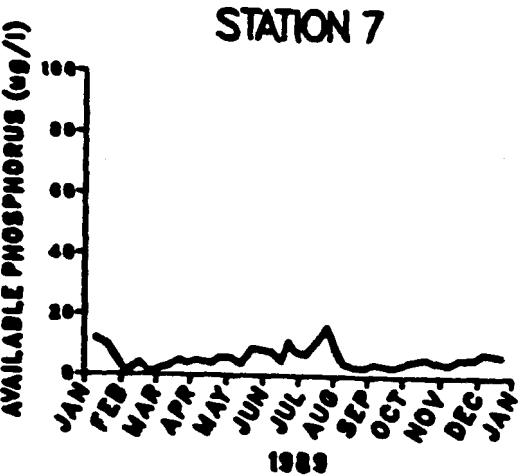
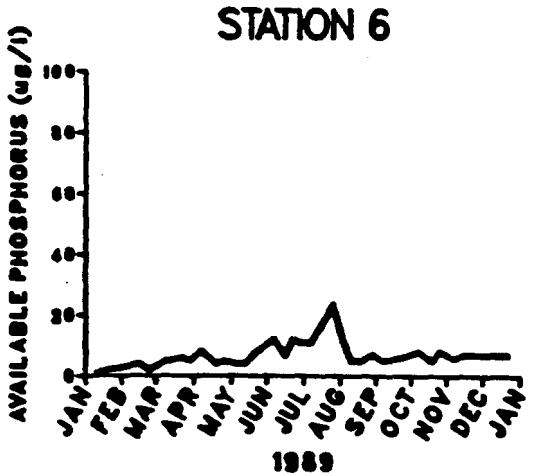
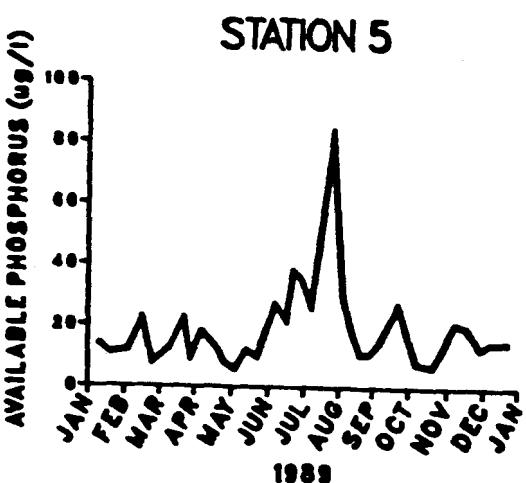
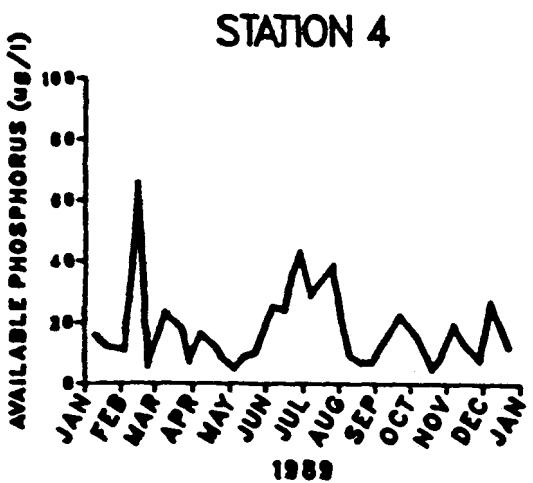
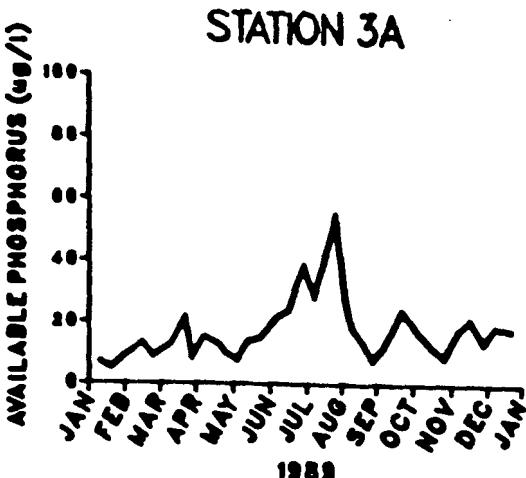
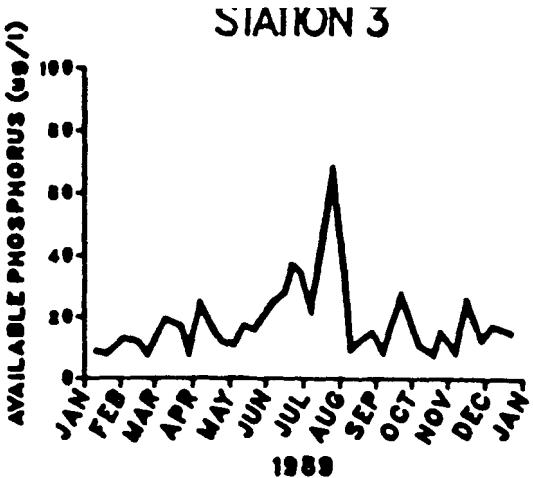
Time Series Plots of Chemical Data by Station

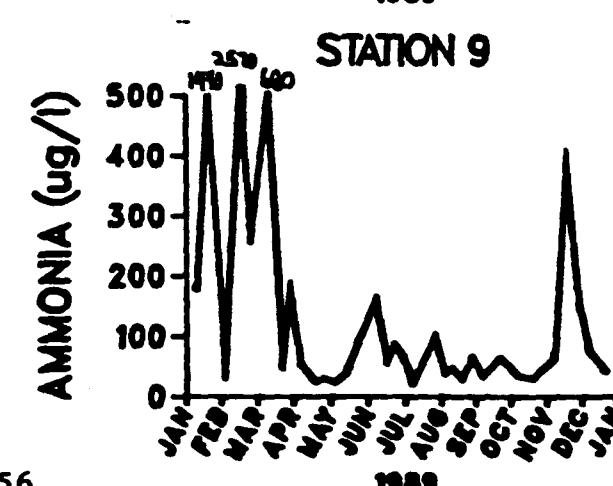
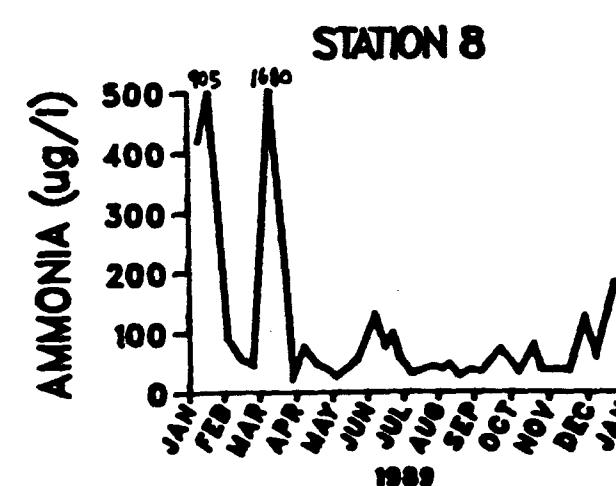
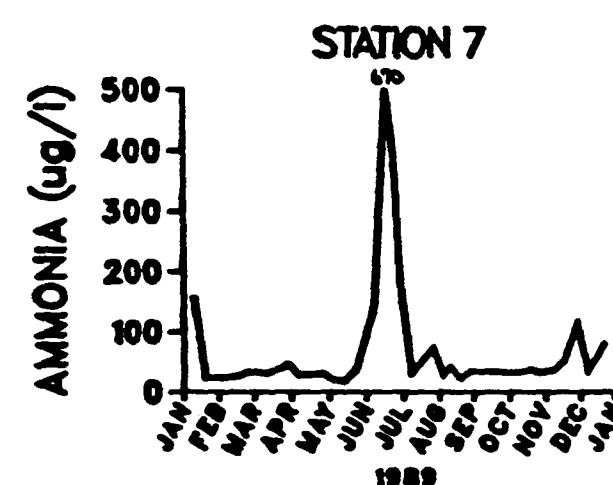
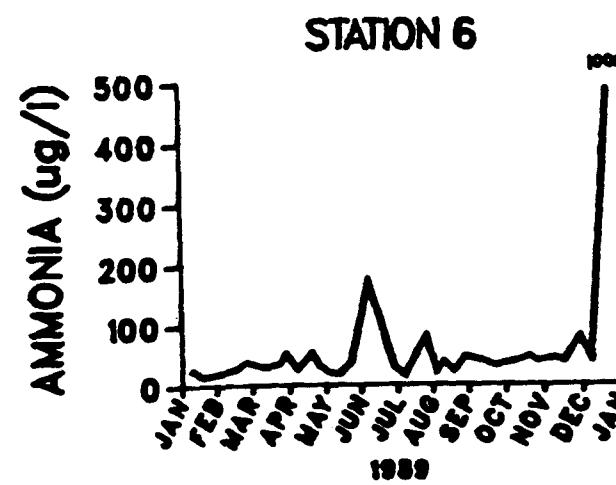
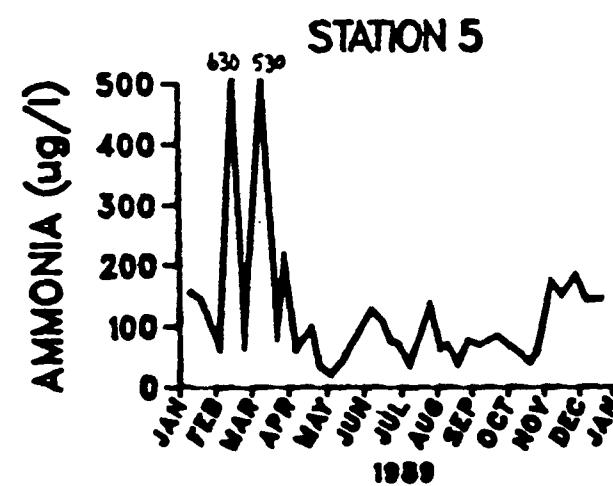
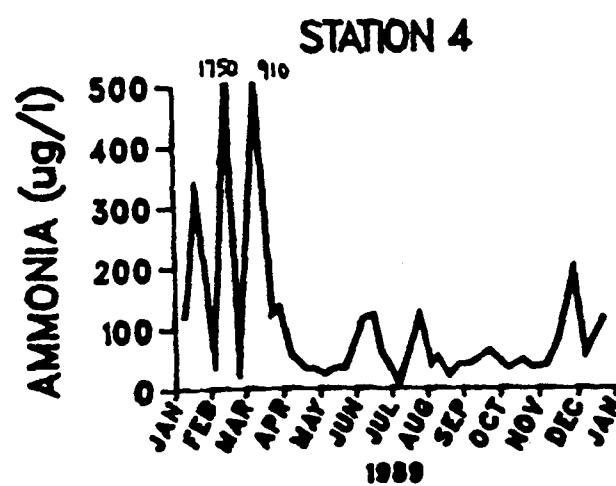
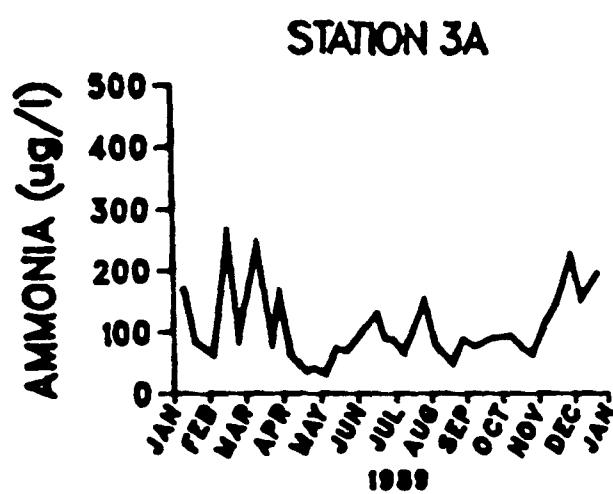
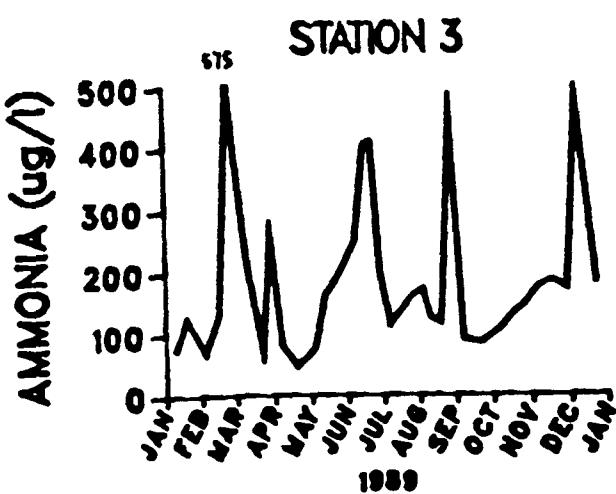


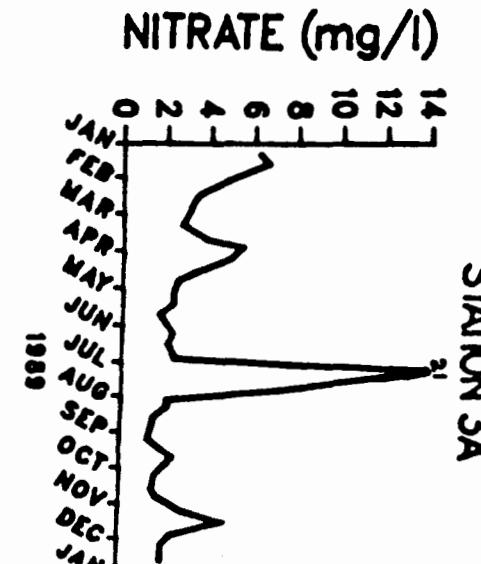
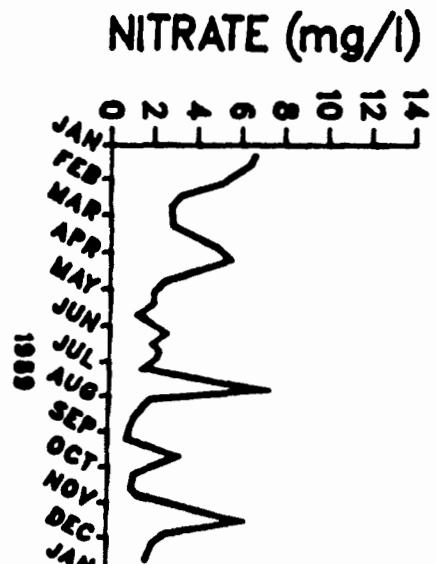
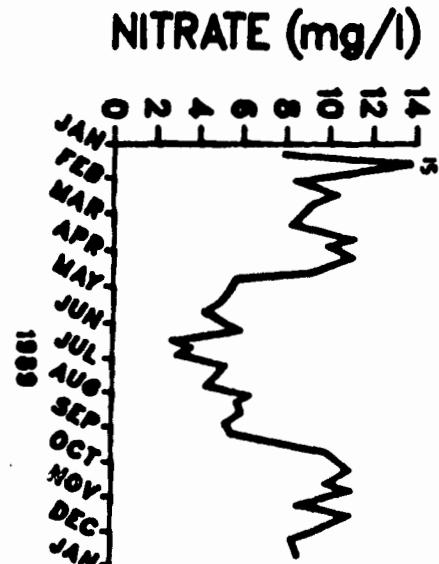
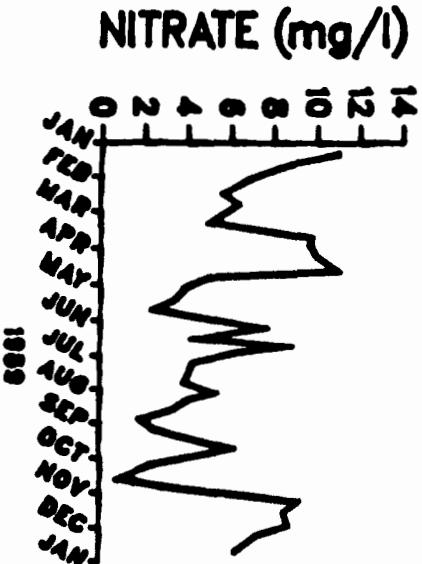
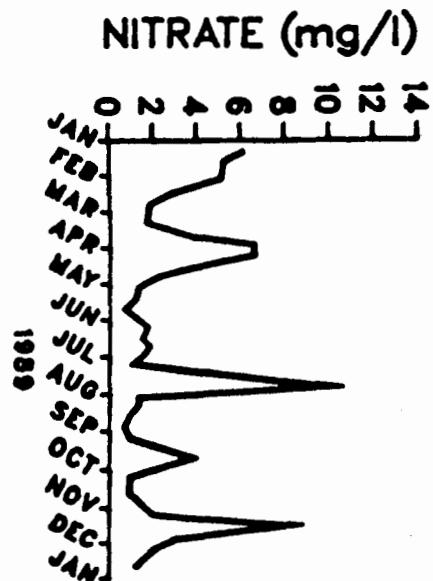
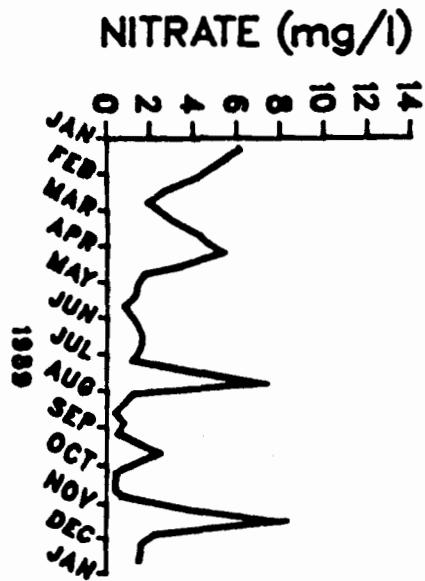
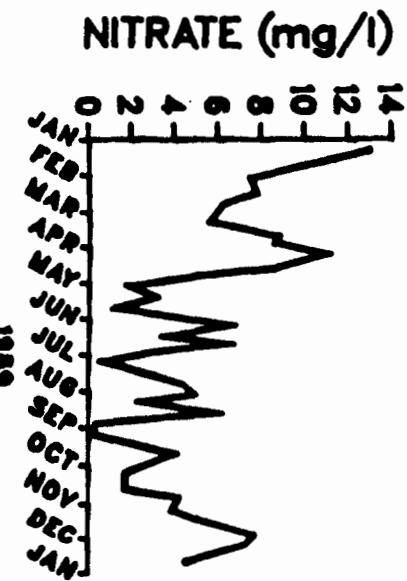
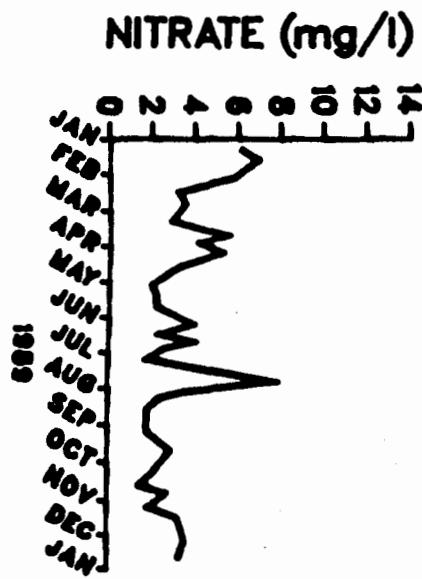




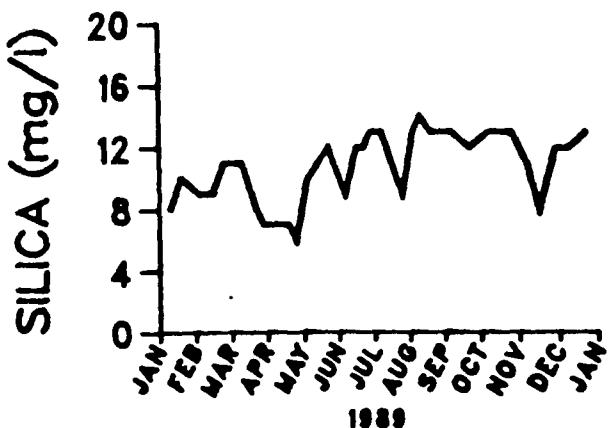
STATION 3**STATION 3A****STATION 4****STATION 5****STATION 6****STATION 7****STATION 8****STATION 9**



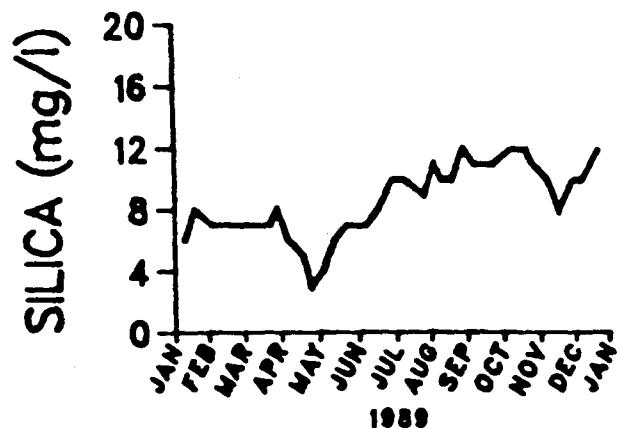




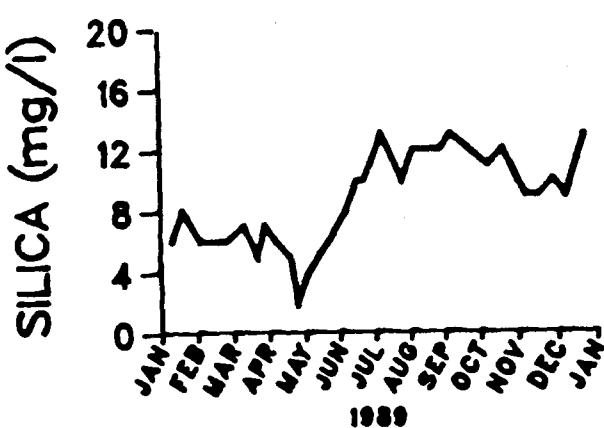
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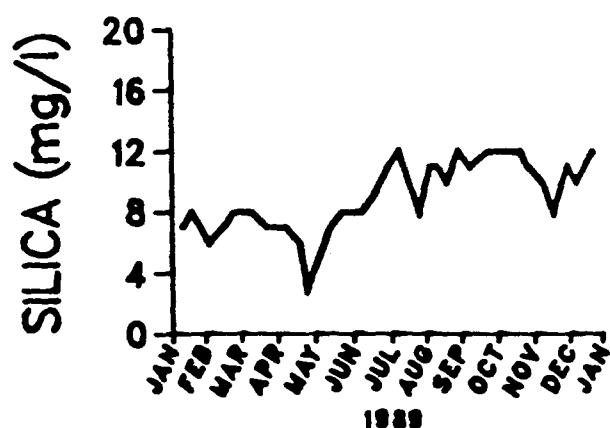
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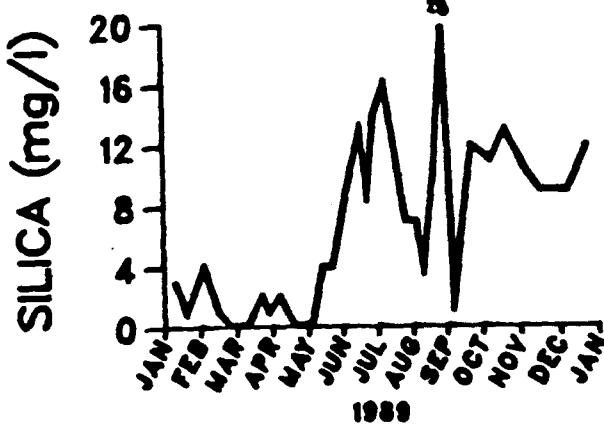
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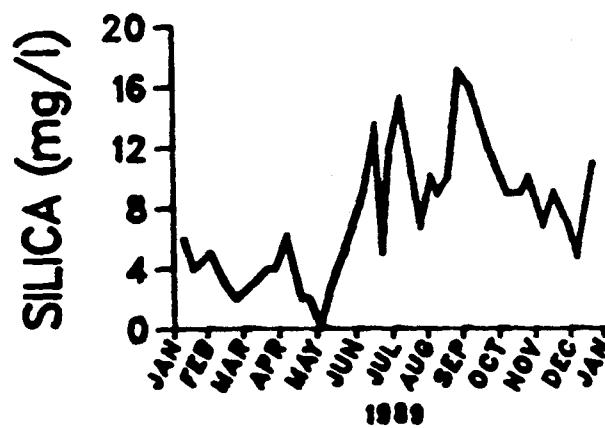
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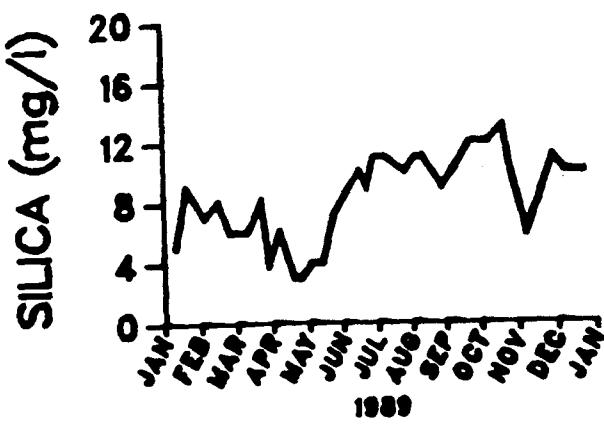
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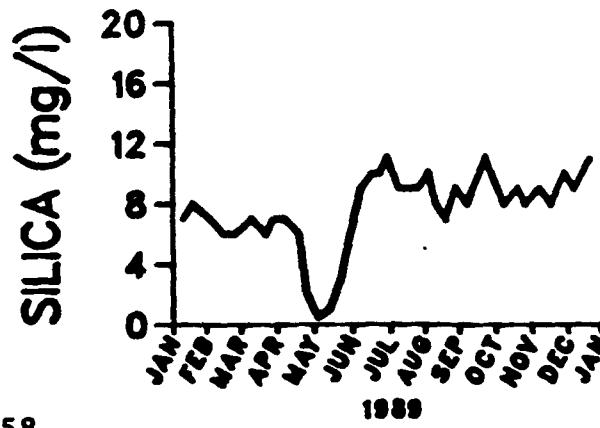
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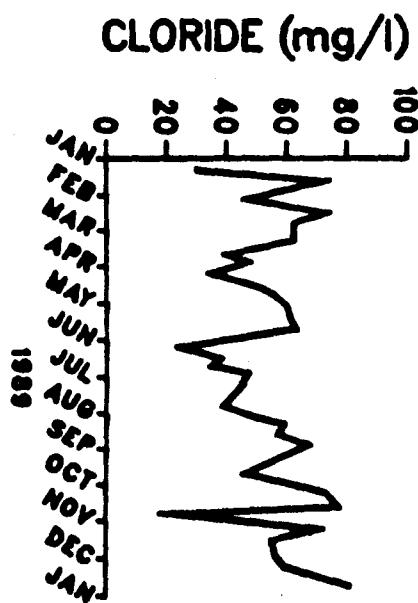


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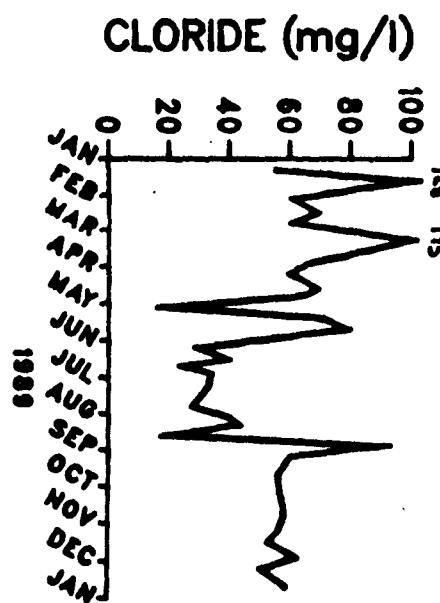


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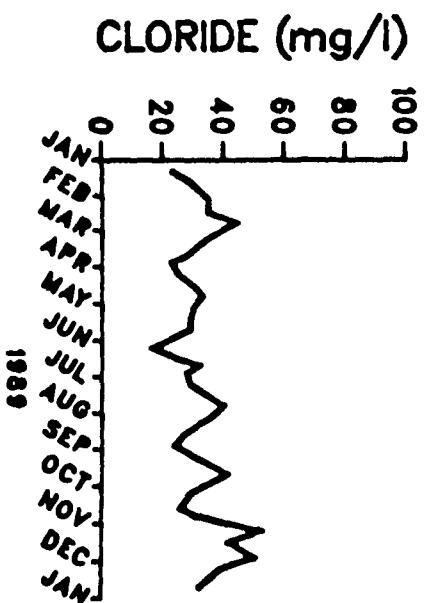




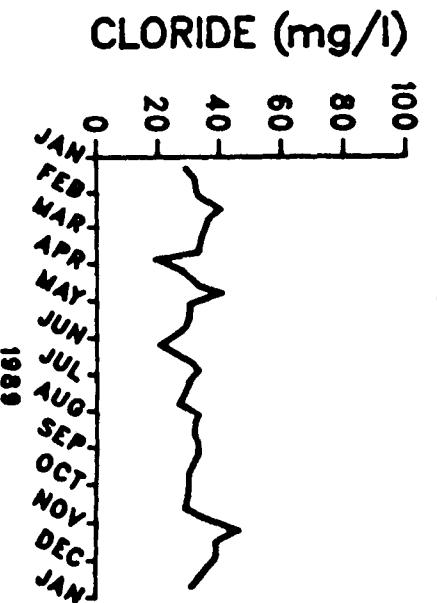
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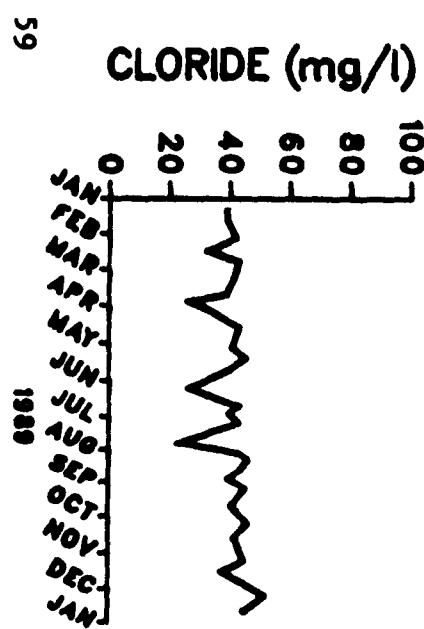
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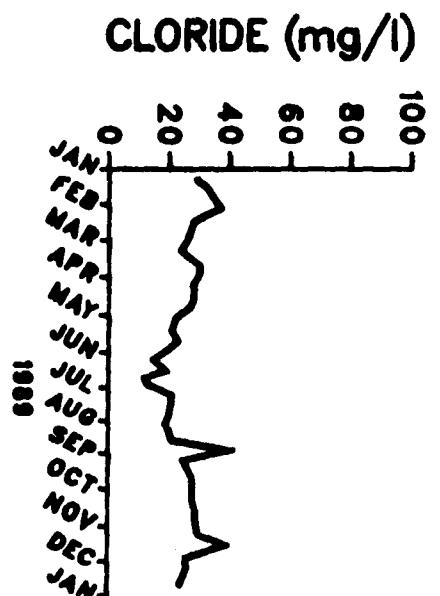
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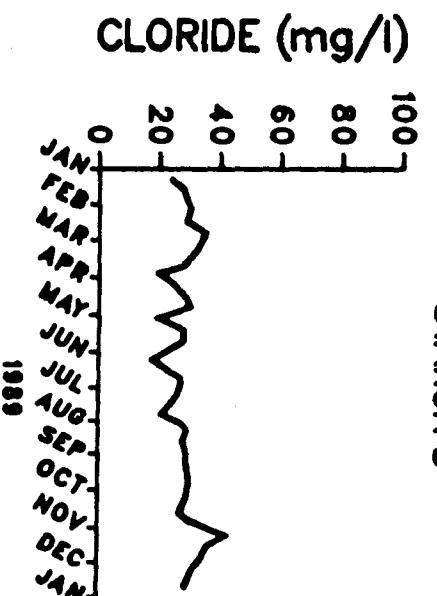
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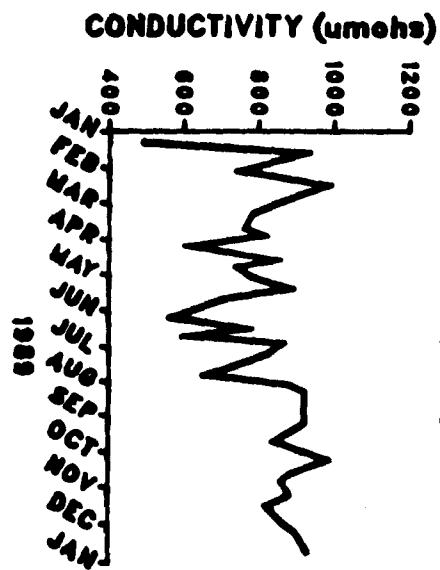


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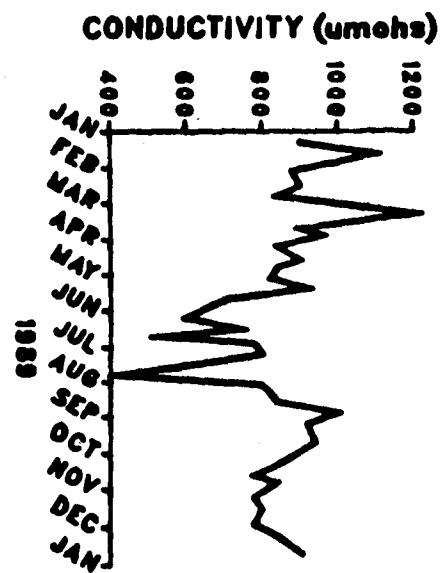


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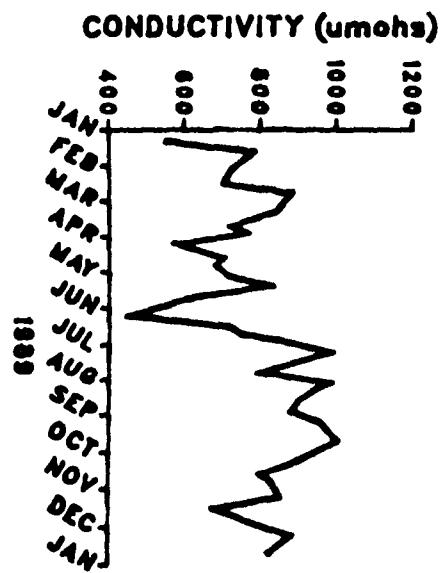
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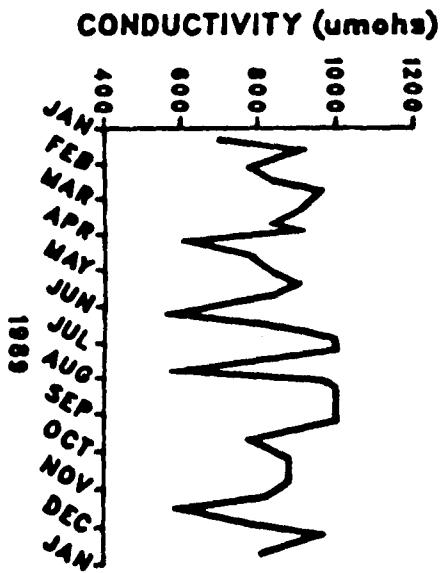
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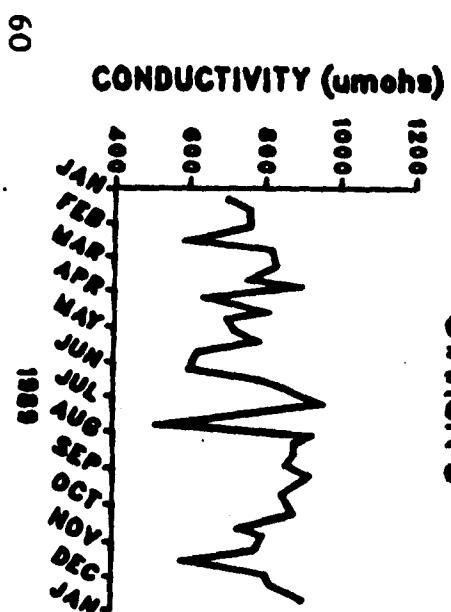
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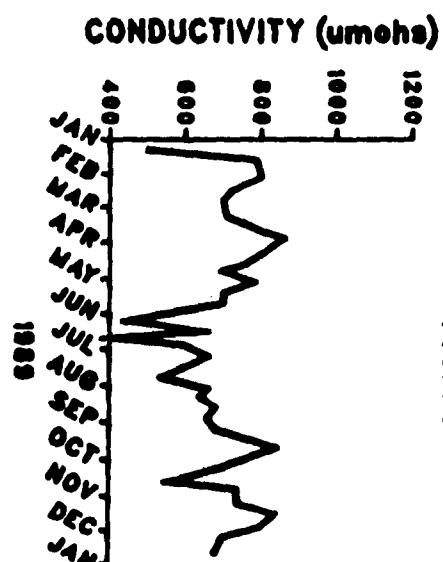
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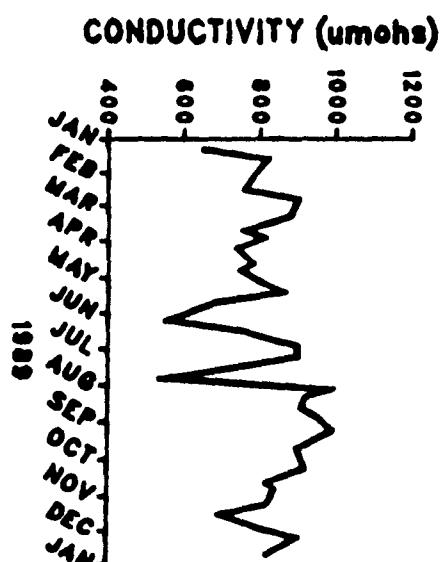
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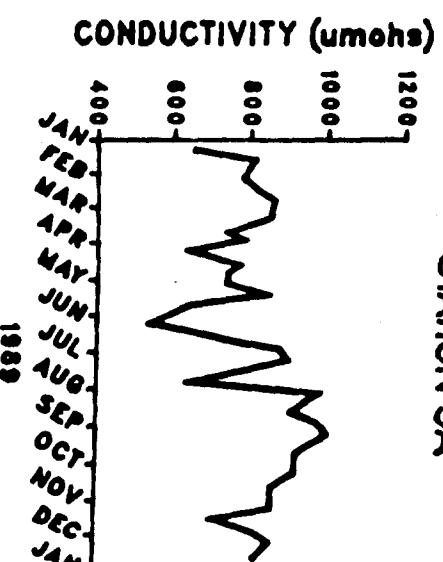
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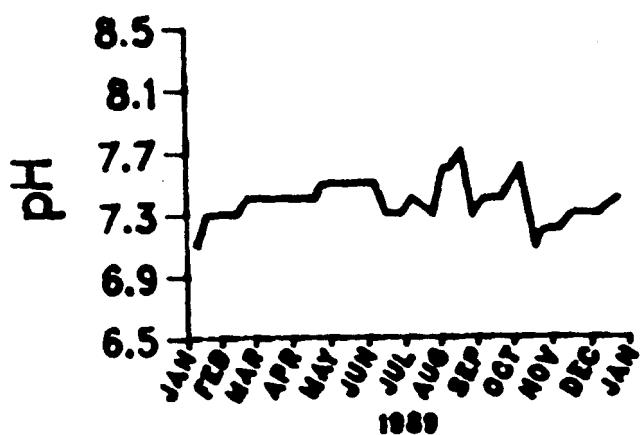


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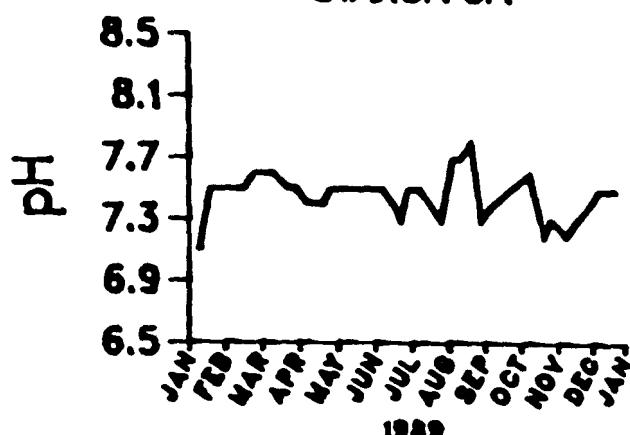


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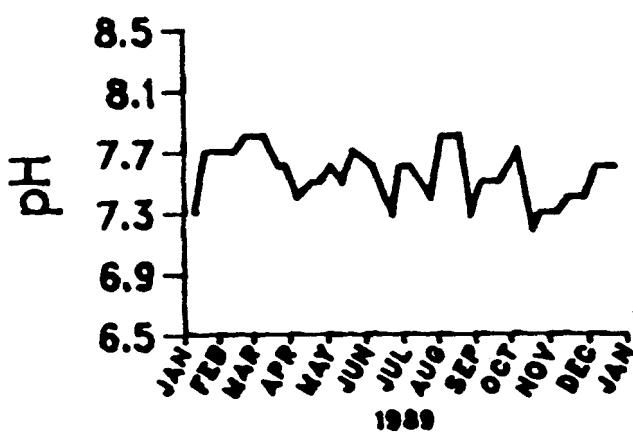
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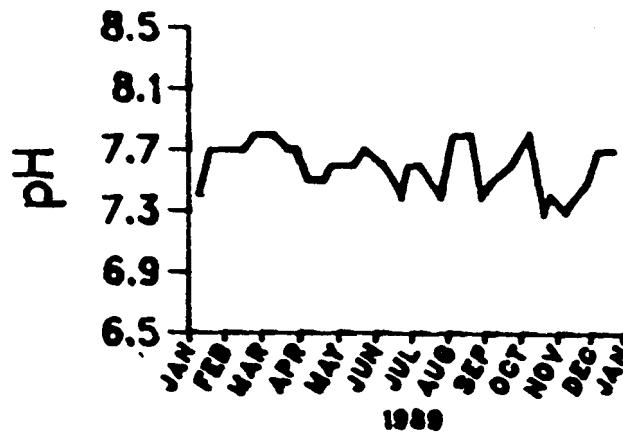
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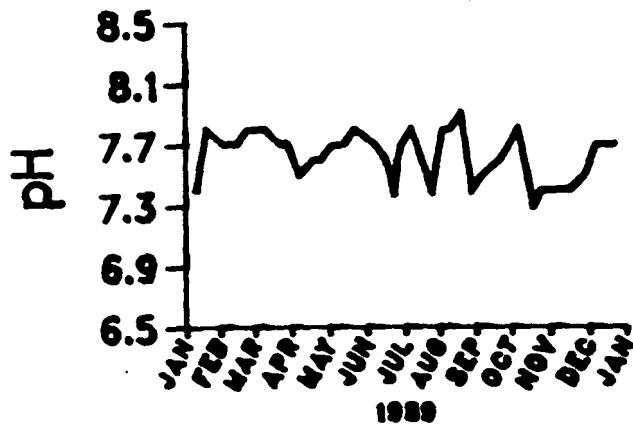
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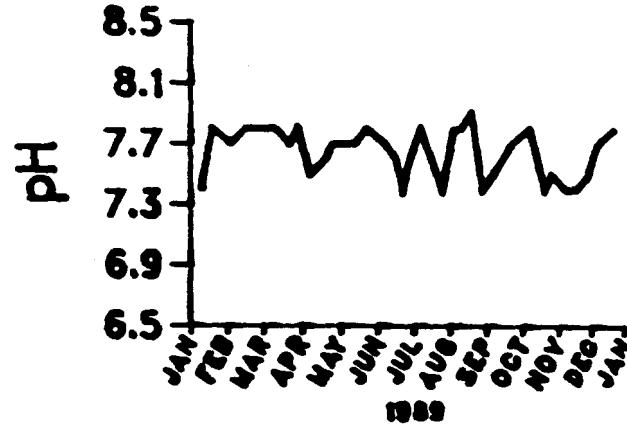
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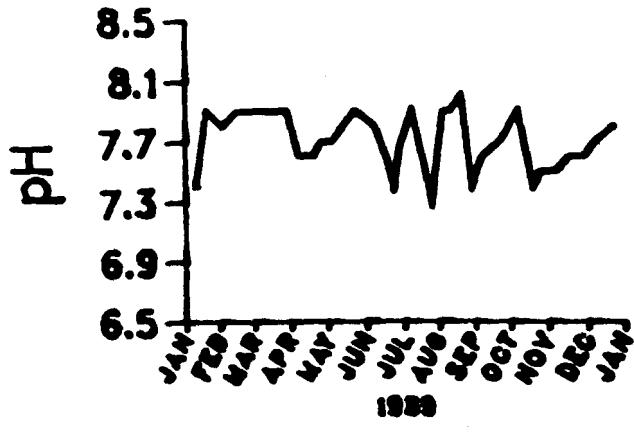
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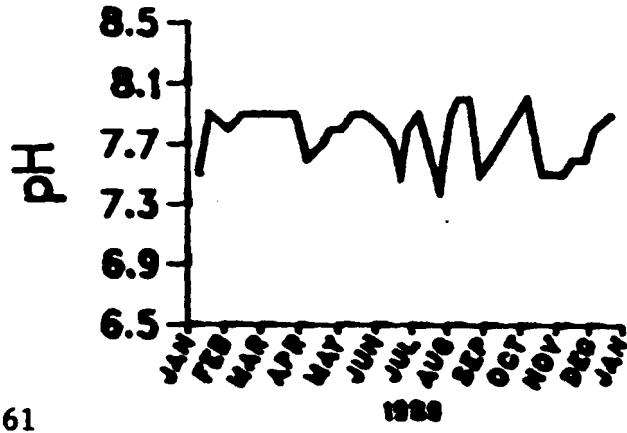
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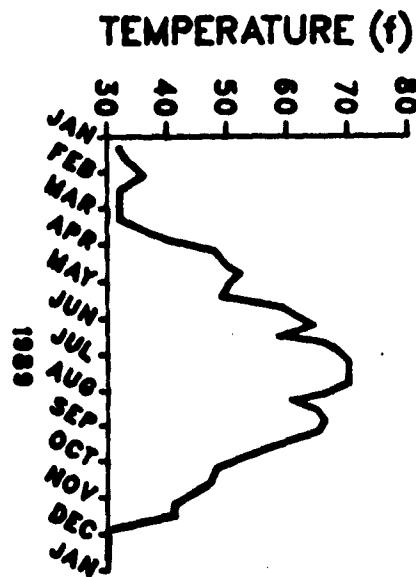


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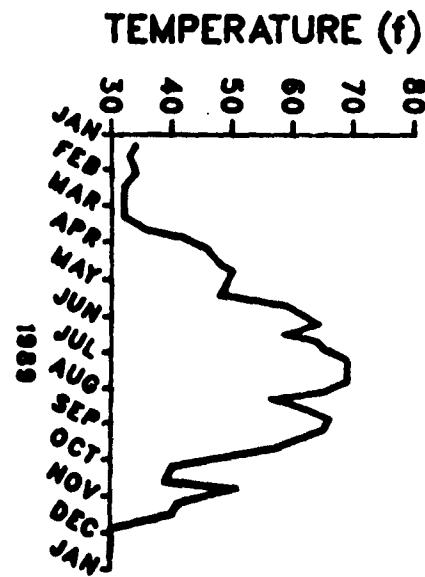


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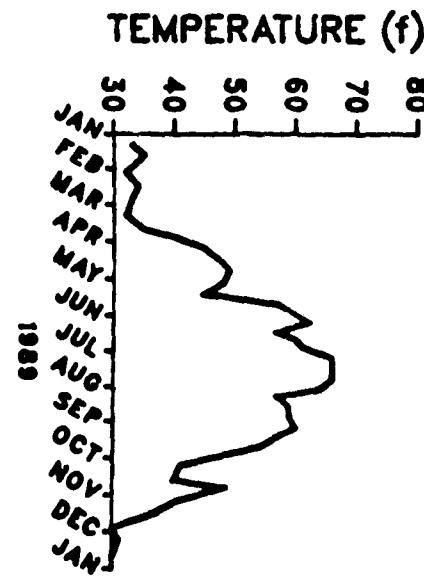




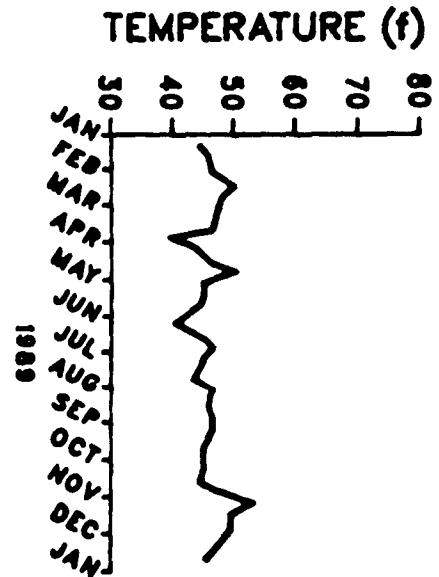
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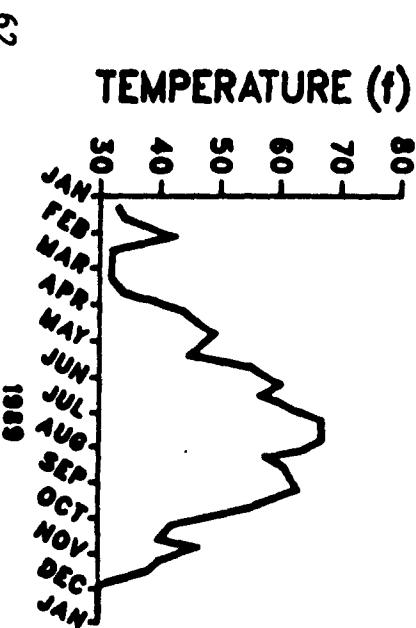
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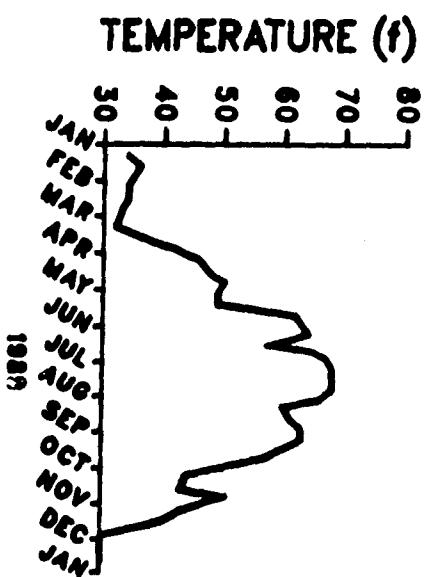
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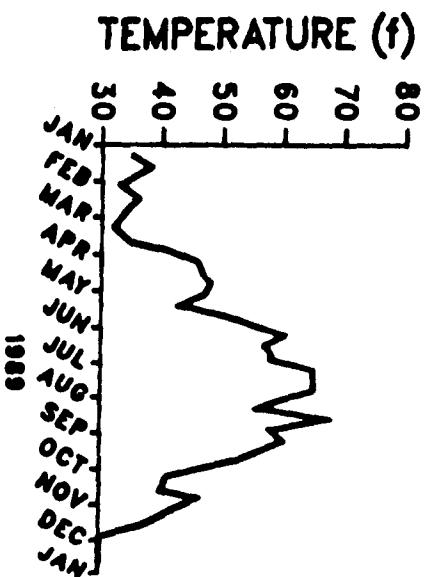
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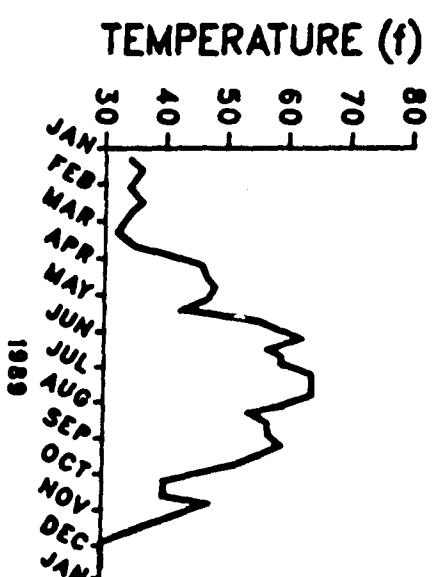
STATION 9



STATION 7



STATION 5



STATION 3A

APPENDIX D

Seasonal Loadings by Station

Table . Seasonal loadings for station 3.

	Dec. 88- Feb. 89	Mar. 89- May 89	Jun. 89- Aug. 89	Sep. 89- Nov. 89
Suspended Solids (mt)	8.8	148.4	102.9	46.5
Ammonia-Nitrogen (mt)	0.056	0.182	0.215	0.090
Nitrate-Nitrogen (mt)	2.47	6.26	4.87	3.52
Sol. React. Phos. (mt)	0.003	0.015	0.035	0.051
Available Phos. (mt)	0.005	0.017	0.041	0.012
Total Phosphorus (mt)	0.028	0.071	0.171	0.105
Soluble Silica (mt)	4.5	8.1	9.1	5.1
Chloride (mt)	15.6	27.7	24.1	20.2
Discharge (10^6 m 3)	0.487	1.090	0.963	0.535

Table . Seasonal loadings for station 3A

	Dec. 88- Feb. 89	Mar. 89- May 89	Jun. 89- Aug. 89	Sep. 89- Nov. 89
Suspended Solids (mt)	202.0	880.6	735.1	470.7
Ammonia-Nitrogen (mt)	1.248	1.686	1.363	1.146
Nitrate-Nitrogen (mt)	54.80	69.59	55.13	30.28
Sol. React. Phos. (mt)	0.069	0.212	0.270	0.370
Available Phos. (mt)	0.085	0.208	0.400	0.172
Total Phosphorus (mt)	0.575	0.972	1.685	1.232
Soluble Silica (mt)	74.6	103.1	101.9	85.3
Chloride (mt)	255.3	356.1	228.5	238.3
Discharge (10^6 m ³)	10.241	16.381	11.756	9.062

Table . Seasonal loadings for station 4.

	Dec. 88- Feb. 89	Mar. 89- May 89	Jun. 89- Aug. 89	Sep. 89- Nov. 89
Suspended Solids (mt)	12.1	106.5	19.1	30.6
Ammonia-Nitrogen (mt)	0.078	0.189	0.033	0.025
Nitrate-Nitrogen (mt)	1.86	5.80	0.68	2.35
Sol. React. Phos. (mt)	0.012	0.023	0.004	0.045
Available Phos. (mt)	0.006	0.016	0.008	0.004
Total Phosphorus (mt)	0.037	0.093	0.043	0.082
Soluble Silica (mt)	2.7	8.4	2.6	2.8
Chloride (mt)	11.5	33.1	6.5	13.8
Discharge (10^6 m 3)	0.383	1.306	0.293	0.321

Table . Seasonal loadings for station 5.

	Dec. 88- Feb. 89	Mar. 89- May 89	Jun. 89- Aug. 89	Sep. 89- Nov. 89
Suspended Solids (mt)	265	2151	1681	798
Ammonia-Nitrogen (mt)	1.739	2.727	1.447	1.305
Nitrate-Nitrogen (mt)	61.2	82.0	49.3	43.2
Sol. React. Phos. (mt)	0.160	0.289	0.333	0.666
Available Phos. (mt)	0.143	0.254	0.582	0.189
Total Phosphorus (mt)	0.815	1.252	2.164	1.649
Soluble Silica (mt)	83.4	122.8	115.1	96.7
Chloride (mt)	313.8	463.6	283.0	344.5
Discharge (10^6 m ³)	11.107	18.796	13.003	9.932

Table . Seasonal loadings for station 6.

	Dec. 88- Feb. 89	Mar. 89- May 89	Jun. 89- Aug. 89	Sep. 89- Nov. 89
Suspended Solids (mt)	1.2	2.8	19.9	4.7
Ammonia-Nitrogen (mt)	0.014	0.026	0.165	0.018
Nitrate-Nitrogen (mt)	5.59	5.51	9.53	2.13
Sol. React. Phos. (mt)	0.003	0.006	0.106	0.014
Available Phos. (mt)	0.002	0.004	0.035	0.003
Total Phosphorus (mt)	0.014	0.023	0.276	0.046
Soluble Silica (mt)	2.0	1.1	16.2	4.1
Chloride (mt)	38.6	50.3	56.9	24.1
Discharge (10^6 m 3)	0.591	0.699	1.981	0.441

Table . Seasonal loadings for station 7.

	Dec. 88- Feb. 89	Mar. 89- May 89	Jun. 89- Aug. 89	Sep. 89- Nov. 89
Suspended Solids (mt)	27.8	5.6	8.9	8.0
Ammonia-Nitrogen (mt)	0.129	0.055	0.346	0.058
Nitrate-Nitrogen (mt)	17.59	15.29	10.07	12.88
Sol. React. Phos. (mt)	0.041	0.013	0.048	0.015
Available Phos. (mt)	0.012	0.009	0.019	0.006
Total Phosphorus (mt)	0.121	0.100	0.191	0.051
Soluble Silica (mt)	9.3	7.3	19.5	12.6
Chloride (mt)	54.5	46.7	37.2	39.4
Discharge (10^6 m ³)	1.709	1.748	2.083	1.310

Table . Seasonal loadings for station 8.

	Dec. 88- Feb. 89	Mar. 89- May 89	Jun. 89- Aug. 89	Sep. 89- Nov. 89
Suspended Solids (mt)	838	1231	1960	327
Ammonia-Nitrogen (mt)	7.802	6.448	2.507	0.708
Nitrate-Nitrogen (mt)	159.5	97.4	108.7	35.1
Sol. React. Phos. (mt)	1.082	0.769	0.747	0.351
Available Phos. (mt)	0.504	0.548	0.846	0.309
Total Phosphorus (mt)	3.603	3.029	4.529	1.366
Soluble Silica (mt)	187.3	126.0	271.6	135.8
Chloride (mt)	1280	1124	1020	783
Discharge (10^6 m 3)	27.494	23.942	28.496	13.701

Table . Seasonal loadings for station 9.

	Dec. 88- Feb. 89	Mar. 89- May 89	Jun. 89- Aug. 89	Sep. 89- Nov. 89
Suspended Solids (mt)	15.0	149.3	89.6	88.6
Ammonia-Nitrogen (mt)	0.573	0.254	0.092	0.249
Nitrate-Nitrogen (mt)	8.32	12.63	5.07	8.03
Sol. React. Phos. (mt)	0.045	0.044	0.052	0.147
Available Phos. (mt)	0.010	0.022	0.042	0.021
Total Phosphorus (mt)	0.108	0.109	0.181	0.308
Soluble Silica (mt)	7.4	8.9	9.2	9.7
Chloride (mt)	41.5	52.0	32.1	46.2
Discharge (10^6 m 3)	1.035	1.466	1.003	1.136

APPENDIX E

Annual Loadings by Station

Table . Annual Loadings for December 1988 to November 1989.

	Sta. 3	Sta. 3A	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
Suspended Solids (mt yr ⁻¹)	306	2288	168	4895	29	50	4357	342
Ammonia-Nitrogen (mt yr ⁻¹)	0.54	5.44	0.33	7.22	0.22	0.59	17.47	1.17
Nitrate-Nitrogen (mt yr ⁻¹)	17.1	209.8	10.7	235.7	22.8	55.8	400.7	34.1
Sol. React ₁ Phos. (mt yr ⁻¹)	0.10	0.92	0.08	1.45	0.13	0.12	2.95	0.29
Available Phos. (mt yr ⁻¹)	0.07	0.86	0.03	1.17	0.04	0.05	2.21	0.10
Total Phosphorus (mt yr ⁻¹)	0.38	4.46	0.25	5.88	0.36	0.46	12.53	0.71
Soluble Silica (mt yr ⁻¹)	27	365	17	418	23	49	721	35
Chloride (mt yr ⁻¹)	88	1078	65	1405	170	178	4207	172
Discharge (10 ⁶ m yr ⁻¹)	3.07	47.4	2.30	52.8	3.71	6.85	93.6	4.64

APPENDIX F

Chemical Data for Well Studies

SALINE VALLEY WELL SAMPLES May 24, 1989

FILE=WELLO52489	WELL A	WELL B	WELL C	WELL D	WELL E	WELL F	WELL G	WELL I	WELL J	WELL K	WELL L
pH	7.3	7.2	7.3	7.3	7.2	7.4	7.2	7.3	7.4	7.4	7.4
CONDUCTIVITY (UMOHMS)	1700	1900	1550	2200	1950	900	2400	1480	1175	690	1200
AMMONIA NITROGEN (UG/L)	32	64	39	143	58000	31	361	46	200	85	1886
NITRATE NITROGEN (MG/L)	2.85	18.47	1.48	0.20	4.26	0.17	0.32	0.24	0.12	0.12	0.12
SOL. REACT. PHOS. (UG/L)	4	88	126	8	6	5	13	292	6	4	335
SILICA (MG/L)	6.9	13.4	19.2	21.0	21.5	13.0	14.2	9.1	12.3	18.0	12.6
CHLORIDE (MG/L)	313.3	183.8	183.8	235.4	92.9	0.8	229.3	96.0	126.3	0.5	229.3
WATER ELEVATION (FT)	94.91	92.51	93.01	75.40	74.87	74.95	93.96	89.67	--.--	--.--	--.--
TEMPERATURE (FAHRENHEIT)	44	45	45	48	49	45	46	46	52	54	56
TIME (HOURS)	0845	0900	0905	1005	1000	1015	1245	1255	0850	0945	1300

SALINE VALLEY WELL SAMPLES October 24, 1988

FILE=WELL102488	WELL A	WELL B	WELL C	WELL D	WELL E	WELL F	WELL G	WELL I	WELL J	WELL K	WELL L
pH	7.3	7.3	7.4	7.1	7.2	7.3	7.1	7.3	7.4	7.4	---
CONDUCTIVITY (UMOHS)	1400	1600	1400	1900	1500	450	1750	1700	1000	600	---
AMMONIA NITROGEN (UG/L)	682	49	189	164	60000	84	105	84	183	74	---
NITRATE NITROGEN (MG/L)	2.84	16.93	2.20	1.08	2.84	1.73	0.44	0.26	0.03	0.01	----
SOL. REACT. PHOS. (UG/L)	34	98	204	15	10	17	10	300	11	11	---
SILICA (MG/L)	9.8	15.0	21.2	22.7	22.3	9.4	15.0	9.8	13.2	19.2	----
CHLORIDE (MG/L)	261.4	180.0	180.0	222.9	85.0	2.8	171.7	189.3	122.7	9.2	----
WATER ELEVATION (FT)	84.14	92.03	92.87	75.14	74.46	74.56	93.61	88.62	--,--	--,--	--,--
TEMPERATURE (FAHRENHEIT)	52	53	54	50	49	51	53	53	54	52	--
TIME (HOURS)	0845	0900	0905	1005	1000	1015	1245	1255	0850	0845	----

Well L: Unable to sample.

APPENDIX G

Best Management Practices Installed in 1989

RURAL CLEAN WATER PROGRAM

BEST MANAGEMENT PRACTICES INSTALLED

1989

STATION #3

<u>DATE</u>	<u>BEST MANAGEMENT PRACTICES</u>	<u>AMOUNT</u>
April	BMP-2 Animal Waste Management System - spreading plan	91.4 acres
May	BMP-8 Cropland Protective System - crop rotation plan	235.3 acres
August	BMP-11 Critical Area Seeding	1.5 acres
November	BMP-2 Animal Waste Management System - spreading plan	91.4 acres

STATION #3A

April	BMP-2 Animal Waste Management System - spreading plan	60.6 acres
May	BMP-8 Cropland Protective System - crop rotation plan	400.7 acres
May	BMP-9 Conservation Tillage	226.4 acres
August	BMP-1 Permanent Vegetative Cover - Pasture & Hayland Mgt.	99.8 acres
August	BMP-11 Critical Area Seeding	.3 acres
November	BMP-2 Animal Waste Management System - spreading plan	60.6 acres

STATION #4

May	BMP-8 Cropland Protective System - crop rotation plan	58.6 acres
August	BMP-1 Permanent Vegetative Cover - Pasture & Hayland Mgt.	11.5 acres

STATION #5

May	BMP-8 Cropland Protective System - crop rotation plan	120.4 acres
August	BMP-1 Permanent Vegetative Cover - Pasture & Hayland Mgt.	4.2 acres

STATIONS # 6 & 7

NO BMP'S ESTABLISHED, ALL CONTRACTS COMPLETED

STATION #9

April	BMP-2 Animal Waste Management System - spreading plan	361.5 acres
May	BMP-8 Cropland Protective System - crop rotation plan	929.1 acres
May	BMP-9 Conservation Tillage	44 acres
May	BMP-1 Permanent Vegetative Cover - Pasture & Hayland Plt.	5 acres
August	BMP-1 Permanent Vegetative Cover - Pasture & Hayland Mgt.	19.4 acres
September	BMP-7 Grassed Waterway	3.9 acres
November	BMP-2 Animal Waste Management System - spreading plan	361.5 acres